

AMERICAN FRUIT GROWER MAGAZINE



APRIL 1923

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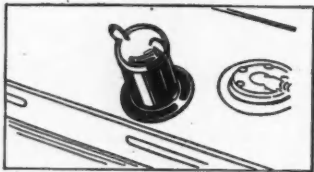
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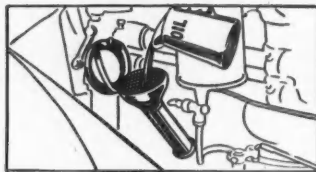
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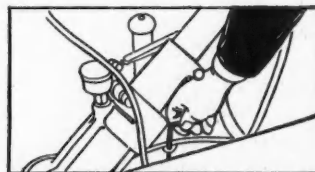
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Why Some Fruit Trees Do Not Bear

by C. I. Lewis

PERHAPS the most exasperating question which the average orchardist is called upon to answer is, "Why is it that some of my trees do not bear?" Perhaps he has spent a great deal of money in many years in growing a beautiful orchard and yet one which is very unproductive.

In order to attempt to answer a question of this kind satisfactorily, we must divide the orchard or trees into two great classes. First, those which do not form fruit buds or blossoms and therefore cannot bear, and, second, those that bloom freely and yet fail to produce a crop. We will now take up the first class of trees, namely, those which do not form fruit buds or blossoms and never bear.

The first thing to find out is the age of your tree. Some varieties naturally come into bearing late, such as Northern Spy, King and Yellow Newtown among the apples, the Anjou and Comice among the pears, and nut trees such as the walnut and the pecan. What kind of soil do you have? If you have a rather heavy loam, it will naturally retard bearing on the part of your trees. The light, sandy and silt loams seem to encourage precociousness. The clay and cold heavy loams retard the period at which the tree would normally bear a commercial crop.

Orchard Management Important.

We must next analyze our orchard management. Are we over-stimulating our trees? Are they beautiful to look at and are they making a splendid wood growth and have they large green leaves? I have seen very handsome trees which were unproductive. If these trees have reached the age at which they should normally begin to produce commercial crops but are not doing so, you may rest assured that your orchard management methods are at fault, that perhaps there is too much heavy pruning; too much stimulation in the way of manures or commercial fertilizers; possibly you are irrigating or tilling too much; maybe your trees are in a chicken run and are receiving too much nitrogen. I called on a man this past season who had a Northern Spy orchard about twelve years old that was not producing; yet, he was cutting his trees very heavily, he was putting on nitrogenous fertilizers, he was carrying on intensive tillage, and he had a rather strong loam. This is certainly a combination which would keep his Northern Spies in their unhappy state until perhaps they are twenty years of age.

If you are an English walnut grower perhaps you are pruning off all the floral organs from your trees and thus preventing them from producing crops. The staminate or catkin and the pistillate blossoms of the English walnut are borne out pretty well on the ends of the terminals on the new growth. If you systematically cut back all the leading branches, you will, of course, remove the crop.

Some growers also still follow the old-fashioned habit of cutting out all the twig growth and all the little branches down near the crotches of the trees. If this is done systematically it will aid very materially in keep-



To bear a crop like this your trees must be right.

ing many varieties of apples and pears from bearing early. The first crops are borne on these small spurs and twigs, which occur first on the lower portions of the tree. Constant removing of them will, of course, mean the pruning off of buds.

Possibly the trees have too low a vitality, the foliage is thin and yellow, there is little or no wood growth. The trees may be so exhausted that they may not be able to even form fruit buds and blossoms, and even if they do, they will be so weak that these blossoms will not set or mature fruit. We see how in sour cherries when the growth is only six to eight inches that all the buds on such wood are flower buds which are weak and are easily winter killed or damaged by frosts and often are so weak that they do not set well, but when we get wood twelve to eighteen inches in length, we get leaves and spurs and fruit buds, we get a much stronger

bud and one which will not winter kill so easily and which will set better. Often in pear trees we find that they are covered with great clumps of old knarly spurs and little or no annual growth is being made and the spurs are weak. The removal of 25 per cent of these spurs throughout the trees will often stimulate the remaining spurs and result in good crop production.

We know that with some varieties like the Anjou considerable pruning must be done after the blooming period has been reached if a satisfactory set is to be expected. You may be attempting to grow some varieties too far north, so far to the north that the tree will grow but the fruiting habits are interfered with. Or possibly you failed to realize that it is not an annual bearer. Maybe with your methods and with the varieties which you are handling you can have a crop only every other year, or perhaps not

as often as that. It must be remembered some varieties bear once in two years.

The Second Group.

Let us now analyze the second group of trees which bloom freely but which do not set their fruit well, or if the fruit does set it begins to drop off about the time the fruit is as large as garden peas or small cherries. There are many factors which would lead to this condition. First, there is the weather—the question of winter injury must come in. Severe winter injury may so weaken the trees that while they may yet bloom, they may set poorly or may shed practically all the fruit which was seemingly set. Possibly Jack Frost is coming along every year and it might pay you to investigate the feasibility of a little orchard heating to fight that old foe. Your orchard may have suffered terribly from drought for several years, or even for one year, and this always seems to weaken the buds and the vitality of the trees and is reflected in the succeeding years, meaning a poor bloom and often a miserable set of fruit. Cold driving rains at the time the trees are in blossom discourage the setting of fruit; or if the weather is too cool during the blooming period and there may be few or no frosts and yet the temperature is cold, it may not be much over fifty in the daytime, but with such a temperature few insects will fly and without the insects good pollination cannot be expected. High winds during the time the trees are in bloom are often destructive. They prevent the flying of insects, they reduce the temperature and all in all are destructive in their influence on the set of fruits.

Diseases and Insects.

Diseases must be reckoned with. Many a fine tree of cherries, peaches or plums is ruined as early as the blooming period by the hard attacks of the brown rot. I know of one grower who lost his prune crop for many years. He thought it was from frosts but investigation showed that brown rot had been cleaning the crop from his trees every spring. Such a disease as scab will clean off entire crops of McIntosh apples or Winter Nellis pears, and it is well known that fire blight is very destructive to crops like apples, pears and quinces. Entire crops may be ruined by an attack of this dreaded disease.

And, again, there are insects which are factors. Bud weevils and thrips take a great toll in some sections. Aphids are responsible for the lack of a good crop. It may not mean a shedding of the fruit when the trees are attacked by aphids, but it will mean malforming or deforming of the fruit in such a way that the fruit becomes worthless.

Lack of Pollination.

The lack of pollination is probably the greatest single factor that is responsible for the lack of setting of fruit when a tree blooms and still does not mature a crop. Nature has seemingly encouraged the crossing of fruit. How many of the flowers of

(Concluded on page 19)

The Pecan In Texas

by W. B. Lanham

DOES Texas really grow pecans, and if so, are they produced in sufficient quantity to affect the market, and what are the opportunities for the pecan business in Texas in the future?

Figures are pretty dry but, if carefully analyzed, they sometimes tell a very interesting story. Below is given a table compiled from the U. S. Census reports, giving the number of bearing pecan trees in Texas and in the other more important pecan growing states of the South, both for 1910 and 1920:

	Trees		Pounds	
	1920.	1910.	1920.	1910.
Ga.	444,722	75,519	2,544,377	354,046
Va.	12,452	868	35,927	10,569
N. C.	17,470	8,876	145,753	74,561
S. C.	55,025	33,366	525,783	159,823
Fla.	112,847	42,512	1,025,873	367,632
Ky.	7,591	2,399	50,352	28,577
Tenn.	4,127	2,037	70,594	25,581
Ala.	176,426	44,683	1,179,735	228,341
Miss.	129,971	60,524	1,559,245	637,293
Ark.	19,233	13,958	348,382	249,955
La.	94,513	36,527	2,242,859	723,587
Okla.	400,480	128,431	4,296,642	894,172

Total .. 1,478,532 453,700 14,019,692 3,694,436
 Texas .. 1,045,694 1,087,619 16,755,421 5,832,367
 So. Sta. 1,478,532 453,700 14,019,692 3,694,436

—321,838 633,919 2,645,729 2,137,931

In 1910 Texas had over 600,000 more bearing pecan trees than all the rest of the South combined. Ten years later we find almost 325,000 trees less in Texas than the rest of the South, in fact, Texas has over 40,000 less bearing pecan trees than she had in 1910. Probably the reason that there are fewer pecan trees in this state than there were ten years ago is that practically all of the pecans that are now bearing are native seedling trees. Most of these seedlings are found growing along streams. Formerly much of the richest river bottom land of the state was covered with native pecan trees. During recent years much of this has been cleared and put into cultivation, thus materially reducing the number of wild pecan trees.

Production Increasing.

The number of trees in the state means very little, unless these trees are producing nuts, so let us go a little further with the study. The first mentioned states in 1910 grew a trifle over three and one-half million pounds of pecans, and in 1920 they produced over fourteen million pounds. This was to be expected when we consider the enormous increase in the number of trees that have come into bearing during the decade.

In 1910 Texas produced over five and three-quarter million pounds of pecans. Remembering now that during the past decade Texas has lost over 40,000 trees, we would expect the production to have fallen off also, but she is still over two and one-half million pounds in the lead of the rest of the South combined, growing in 1920 16,750,000 pounds. Of course, that year was a good pecan year in Texas. It was also a good pecan year all over the South.

When one considers the enormous size of Texas, he instinctively thinks that it is not surprising that Texas has more pecan trees than the rest of the South, for he may get the idea that the acreage of Texas is greater than the combined acreage of the states mentioned above. The acreage in Texas is approximately 167,900,000, while the combined acreage of the states that we are comparing her with is over 371,000,000.

Requirements of Pecans.

Of course, not all of the acreage in any of these states is suitable for pecan culture. Pecans require a rather mild climate, long growing season, and a deep fertile soil. Part of Texas does not supply these conditions but there are thousands and thousands of acres, particularly in the river bottom of this state, that are ideal for growing pecans.

Some of the best improved varieties of pecans, such as the Burkett, Halbert, San Saba and Texas Prolific,

have originated in this state, that is, they are simply strains of superior wild nuts that have been propagated. The wild nuts of Texas compete very favorably in the markets with improved nuts grown in other places, in fact, the pecan crop brought to Texas growers in 1920 almost three

few exceptions, the planting of pecans commercially in Texas has been taken up only within the last few years. A notable exception is the Combination Orchard at Winona in east Texas, managed by Mr. E. C. Butterfield. About sixteen years ago they planted about 1,000 acres in peaches. A few



Combination Orchard Co.'s pecan grove after removal of peach trees. Orchard 15 years old.

and three-quarter million dollars, and there was practically no outlay except for harvesting and marketing.

Col. Ike Pryor of San Antonio one year sold over forty carloads of pecans. These were practically all native pecans from trees that had re-

years later they began to realize the opportunity of pecan growing in that part of the state. Although most of the wild pecans in Texas are growing along creek bottoms, in a rich sandy loam, it was thought that the Orangeburg sandy loam, on which the Com-



San Saba (Texas type) in bloom on grounds of A. & M. College, College Station, Texas.

ceived no attention except harvesting the nuts.

The Wild Pecans.

The vast majority of pecans that come onto the market from Texas now are wild pecans, but that does not mean that there is no attention being paid to planting improved varieties. The Census Report for 1920 shows that, while in 1910 only a few over six thousand farms reported pecan trees, almost 9,600 reported young pecan trees in 1920, an increase of almost seventy per cent. With a

bination lands were planted, would also grow good pecans, so pecan trees were planted in the peach orchard about sixty feet apart, mostly of the following varieties: Stuart, Schley, Delmas, Pabst, Success. As the pecan trees grew large enough to require more room, the peach trees have been removed from about 700 acres of this orchard and the remaining 300 acres of peaches will be taken out shortly.

Orchard Culture.

The orchard is planted to cow-peas early in the spring and as soon as the

peas ripen it is disked in with a heavy disk and a volunteer crop of peas at once springs up. This is allowed to mature and is also disked in, sometimes two or three crops being added to the soil in one season and from the original planting.

The older trees are now around sixteen years of age, and last year all the trees over twelve years old produced from 60 to 75 pounds per tree, those around ten years of age averaging only about 15 pounds. The pecans are carefully graded and sold on their merits and have brought from 40c to 75c a pound. E. Gentry, County Agent of Smith County, estimates that there will be a crop of around 100,000 pounds on the orchard this year. While this is a short crop, at the above prices it would yield a nice little revenue at that.

Big Developments.

Just this last year, there was planted near the A. & M. College on the Brazos river by Charles Felker several hundred acres of improved pecans. On the Trinity Valley farms near Dallas was planted over one thousand acres of improved pecans last year. This planting is on very superior alluvial bottom land, which has been leveled to protect it from overflow, and the young pecan trees planted 70 ft. apart were given careful cultivation, the rest of the land being cultivated to cotton. The cotton made from one quarter to three-quarters of a bale per acre, and the manager estimated that he produced from ninety to ninety-five per cent as much cotton as if the pecan trees had not been planted. This large company has its own pecan nursery in charge of J. A. Evans, who was formerly Pecan Specialist for the Extension Service of the A. & M. College. They also have Oscar Gray, a graduate of the A. & M. College of Texas, for Horticulturist, who devotes his entire time to their pecan groves. So much confidence has this company in the future of the pecan industry that they are planning to plant one thousand acres a year to improved varieties of pecans for the next five to ten years.

There are vast acreages of land in Texas suited to pecans that are now growing farm crops only. Pecans have been so easily grown in this state, or rather so easily harvested, that it is the exceptional native Texan who takes an interest in planting a grove. However, the state is awakening up to its opportunity.

While J. A. Evans was Pecan Specialist for the Extension Service, he devoted his entire time to the development of pecan culture. Due to his efforts and those of such men as Colonel Holland, Dean Kyle and Charles Edwards, people are beginning to appreciate the possibilities of growing pecans. While there has been much easy money made simply by harvesting pecans, thinking horticulturists realize that such conditions cannot continue indefinitely. To be really successful at a stable business, pecans must be planted and cared for properly. Improved large, "paper shell" varieties are being planted that will demand a premium on the market.

Texas does not have to go to other states for varieties either. In addition to the varieties mentioned above that have originated in this state, there are, no doubt, many wild pecan trees that are now producing even a better nut than any we have at the present time. There is little danger of over-production as the area of profitable pecan culture in the South is comparatively limited and the demands for pecans are increasing more rapidly than the supply.

Pecan growing in the future must be considered a business, not a "get-rich-quick" scheme, and for the man who loves the business, has a little capital and a vast capacity to "get up and go," Texas not only extends a hearty welcome but we believe affords a real opportunity.

Precooling of Summer Fruits

by J. R. Magness

Plant Physiologist, (U. S. Department of Agriculture)

THERE is perhaps no single problem connected with the successful production of perishable summer fruit that offers greater difficulty than that incident to the proper marketing of these fruits. Upon the successful marketing of the crop must depend the profit or loss from the year's operation. Notwithstanding the high type of salesmanship that may be employed, profitable marketing must depend upon (1) a product arriving in the consuming centers in high class condition, so that it will make a good appearance in the retail trade, and (2) upon a sufficiently broad market so that the fruit can be distributed and local "gluts" avoided.

Because of the tremendous losses that annually occur in this country, due to fruit and vegetables becoming overripe and decaying while in transit to market, the U. S. Department of Agriculture has for many years been investigating the best methods of handling and transporting fruit to get it on the market in the best possible condition. As a result of these studies, a great deal has been learned concerning the fundamental factors concerned in the proper handling of fruit.

Certain fruits, such as berries, must be handled very rapidly when they become ripe, if there is to be no loss in marketing. As fruit approaches ripeness on the vine or tree, it becomes gradually softer and softer. By the time berries, cherries, etc., first reach full color on the vine or tree they are usually still firm to the touch, but much softer than the green fruit. This softening with ripening apparently is true for deciduous fruits in general, but appears most marked in berries and other summer fruits, due to the rapidity with which the ripening and softening occurs.

Regardless of whether or not the fruit is separated from the plant, the ripening continues. In most fruits, the ripening is somewhat more rapid after picking than before, provided it is held at the same temperature. The total length of time the fruit will hold up, following picking, however, will depend to a considerable extent upon how ripe it is when picked. If allowed to become too soft before picking, summer fruits will not hold up long after being removed from the tree or vine. If such fruits as cherries, plums, berries, etc., are picked too early, however, they are low in sugar content, high in acid, and of very poor quality.

The number of days that fruit in

any particular condition of ripeness can be held after its removal from the vine is largely dependent upon temperature. It is a well known fact that ripening in the field is much delayed by low temperatures, and it is equally true that the ripening and softening of the fruit after picking is retarded in proportion to the temperature reduction. Most summer fruits will soften and ripen 5 to 8 times as rapidly at 65° F. as they will at 42° F. The ripening processes cannot be stopped entirely at any temperature that will not freeze the fruit, but they can be so retarded that even such highly perishable fruits as strawberries can be successfully placed in markets at great distances. California strawberries are shipped to Texas, St. Louis, Kansas City, and last summer one car went even to New York. Hood River, Ore., and Puyallup, Wash., berries are frequently seen on the Chicago markets. These results are accomplished by extreme care in picking, rapid handling, and precooling before loading into the car. While most of this discussion will deal with precooling, it must be emphasized that precooling is not a cure-all, as some districts have learned to their sorrow, but is one step, equally but not more important than careful picking and handling, in successfully placing perishable fruit on distant markets.

Purpose of Precooling.

The term precooling is applied to an initial rapid lowering of the temperature of a product before transporting it to market, or before placing in permanent storage, as the case may be. The reason for this can be readily understood from the discussion of the relation of temperature to the ripening processes. When one of even the very best of refrigerator express or freight cars is filled with hot fruit during the summer season, from two to four days, depending upon the product with which the car is loaded, must elapse before the produce in the car attains the temperature at which the ice will hold the car after it is once cooled down. Careful tests carried out by the U. S. Department of Agriculture have shown that a properly iced refrigerator car will finally reach a temperature of

about 40° to 45° at the bottom of the car, and 50° to 55° in the top of the car, during summer weather. It has been found, however, that if the car is loaded with pears, at least four days must elapse before the fruit attains that temperature. Berries, sour cherries, and other fruit packed in crates will cool somewhat more rapidly, but two to three days will elapse even with these fruits before they finally are reduced to around 50°. Since three days is usually more than the extreme limit for shipments of berries, and represents an average shipment on certain other summer fruits, it can be seen that these fruits loaded hot into cars never really reaches a thoroughly cooled condition before the car arrives at destination. Ripening processes are checked only when the fruit itself is thoroughly cooled.

The purpose of precooling is to cool the fruit as quickly as possible after it is removed from the vines or trees down to a temperature a little below that at which the ice in the car will hold it. This quickly checks the ripening processes, and if properly done, insures a firmer and harder fruit arriving on the market.

Methods of Precooling.

There are two methods that have been very extensively employed in precooling. The first of these is car precooling, the second, warehouse precooling.

When car precooling is used the fruit is loaded into the cars hot, as it comes from the fields. The cars are then spotted alongside the precooling plant, and connections are made through the plugs at the tops of the ice bunkers with air ducts from the plant. Then very cold air is passed in at one end of the car and out at the other. The car is held, occasionally reversing the direction of air movement, until the fruit is thought to be sufficiently chilled, then they are ready to go. Although this type of precooling plant was quite popular a few years ago, it has not proved to be nearly so successful as warehouse precooling. There is much loss of refrigerating effort, making the plants expensive to operate. More important still, the fruit is not cooled evenly. The air tends to pass

through the larger open spaces in the cars, and the centers of the compact stacks of boxes or crates are not cooled thoroughly. In order to prevent the load from shifting, it is essential that the packages be loaded as compactly as possible, and this results in the worst possible arrangement for cooling. In the light of past experience, the construction of this type of plant is not to be recommended.

Warehouse Precooling.

In warehouse precooling, regular cold storage plants equipped for rapid cooling, are utilized to cool the fruit before it is loaded into the cars. The fruit is brought into the plant as quickly as possible after picking, and packing, and placed at once in the precooling rooms. Here it is cooled as quickly as possible. The success of precooling, if fruit is picked and handled properly, will depend very largely upon the rapidity with which the fruit can be cooled. The plant should have sufficient refrigerating capacity to cool strawberries thoroughly within 6 to 8 hours after being taken into the storage rooms. Sour cherries should be cooled within 8 to 10 hours, and peaches, pears, and plums in 12 to 15 hours.

Failure in many cases in attempting to precool fruit has been due to lack of sufficient refrigeration capacity for the quantity of fruit to be handled. It is obviously better to load fruit at once and start it on its way to market than to hold the fruit at the cold storage plant for twenty-four hours, and then not have it thoroughly cooled.

Refrigeration engineers rate their equipment in tons per twenty-four hours, a ton of refrigeration being the equivalent to that produced by the melting of a ton of ice. To insure the prompt cooling of the fruit, it is essential that at least 5 tons refrigeration be provided for each car of small fruits per day that it is planned to handle. Thus, if a maximum of 15 cars per day will be handled through the plant, 75 tons refrigeration will be required to properly cool the fruit. For such fruits as pears and summer apples 6 to 7 tons refrigeration per car per day should be provided.

Handling Fruit for Precooling.

Since the salient requirements for successful precooling of fruit are (1)

(Concluded on page 15)

The Advantages of the Filler System

by Harold R. Hitchings

New York

A PROBLEM for serious consideration in planning an orchard is the advisability of using fillers. There are many factors which have a bearing on this subject, such as the value of the land, soil characteristics, varieties to be used, method of cultivation and possibly the distance from the packing house.

In general where the land has a relatively low value, say from \$100 per acre down, it would seem more wise not to use the filler system, but there might be a number of reasons whereby it would be advantageous. By planting the permanent trees from forty to forty-five feet between the rows and forty feet in the row you have ample opportunity to take care of each individual tree over a long period of years without crowding and where crops are to be grown between the rows you would be able to plant a considerable proportion of the whole area without doing serious harm to the trees. Also in alfalfa, sod if one wished to do so the hay could be removed more easily than if the trees were planted relatively close, but is it a wise plan to intercrop with hay and field crops? In certain cultivated areas where the crops are not carried too long or planted too close to the trees and

fertilizers are added and the supply of humus is maintained it will work all right. But in a sod orchard the removal of the hay crop will certainly work a hardship on the trees unless some provision is made to fertilize the trees or put back a supply of vegetable matter. On cheaper land the orchard could be spread out over more acres with approximately the same cost and there is a certain gain in being free from the harmful crowding as the trees attain age, and also the trees may be sprayed easier, the circulation of air is better, and in driving through the orchard much brushing of limbs with consequent knocking off of apples and fruit buds may be avoided.

Early Returns Desired.

But many people in starting an orchard do not feel that they can wait ten or fifteen years for the permanent trees to come into bearing without some return from the land, so why is it not better to intercrop with early bearing apple trees which will start at four or five years of age and will

in all probability pay for the care of the orchard from this time on and also bring in some extra profit? Usually the fillers are at their point of highest production when the permanent trees start bearing crops and it is a hard thing for the grower to cut these trees down. To make this cutting certain at the right time a definite method of procedure should be adopted and followed to the letter.

If the orchard is to be cultivated other intercrops may be grown for a few years but one should aim to get the fillers into bearing at the earliest possible moment and crowd them till the time set for their removal. If the side limbs of the fillers bother in driving through the orchard they should be trimmed off close to the body and the top of the tree should be depended upon for future crops. If some of the filler trees begin crowding before the time scheduled for their removal they should be cut and the grower should not figure any loss.

On poorer soil trees naturally make a slow growth so here fillers can be used without crowding for possibly

twenty or twenty-five years. The main point is to get the largest production from a given area of land of the highest quality apples in the easiest way, or at the least cost. If we can take an area of poorer soil or a highly productive soil and plant the trees a little closer by using different varieties and push some of these trees a little harder and get some profit out early in the game we have accomplished something worth while.

The Right Varieties.

A factor which enters largely into the working of this system is one of varieties. There are many varieties that might be used to advantage, depending on the location, but to the writer's notion, Wealthy, Duchess and Rome answer to the requirements most satisfactorily, with possibly the addition of Wagner and Transparent. These varieties are mentioned for New York State conditions, so one should choose the best variety suitable to their locality and market. This variety should be small in growth and should start bearing heavily in early life. I believe the best results may be obtained by very little trimming of the filler trees unless they bear so heavily that the size decreases. We

(Concluded on page 33)

The Fig In The South

by T. H. McHatton

THE fig is one of the four fruits that has been intimately woven into the fabric of human civilization. It is mentioned frequently in history and was one of the plants that was disseminated through the channels of early commerce into the various sections surrounding the Mediterranean, some even being carried as far north as the British Isles. This fruit has for a long time been prominent in Spain, and, when the Spanish fathers followed Cortes into Mexico, it is presumable that they brought the fig with them, for around the missions that belonged to these forerunners of Christendom were found plantings of this fruit. These same adventurous spirits, in the Garden of the Lord, carried the fig into California, where for a hundred years the Mission fig was the only one grown.

In the South, along the Gulf Coast, and in the South Atlantic States figs grow abundantly. From whence they came originally is not known. It is probable that some were introduced into Florida by the early Spanish settlers. It is also possible that others came across the Rio Grande by the route of Mexico, for Texas is filled with Missions just as California. It is certain, however, that from wherever they came their dissemination is practically universal from the Carolinas south and west to the Mississippi and into Texas.

Botany of the Fig.

The common fig belongs to the genus *Ficus*. Its specific name is *carica* and, botanically, it is closely related to the genus *Morus*, in which is found the mulberry. From a horticultural standpoint there are three types of figs. The common fig of the South is known as a mule fig. By this is meant that it is a plant which will produce its fruit without pollination. There are three crops of fruit possible on a mule fig. The first, or early crop, is produced laterally on last year's wood. (This crop is usually killed by cold weather and can in no way be counted upon.) There is then a second crop on the current season's growth. Generally this is the large and main crop. The third crop is produced late in the season on the current year's growth. Some varieties, instead of producing a definite third crop, have a continuation of ripening so that the second and third crops grade one into another and the two crops cannot be definitely separated.

The Smyrna figs require that the ovules be fertilized and that seeds be produced in order that the crop may be made. This type of fig is not grown in the South due to the fact that the necessary insect, a very tiny wasp, the *Blastophaga grossorum*, is not yet firmly established under southern conditions. The third type of fig, known as the capri fig, is sometimes referred to in foreign literature as the "goat fig." This capri fig is not edible, but is of service in furnishing a habitat for the *Blastophaga* and in insuring its continuation from one season to the next. Without interlocking and continuation of crops of capri figs, there is no chance of carrying the necessary fig wasp through the winter, and, where winter climates are so cold that the capri figs do not carry a crop through the winter, the naturalization of the *Blastophaga* is not possible.

Southern Distribution.

A glimpse at some statistics will show the general distribution of the fig throughout the South. In 1920 there was reported in South Carolina 23,711 fig plants, yielding 293,496 pounds of fruit. In Georgia there were 55,928 plants, yielding 633,509 pounds of fruit. Florida had 40,470 fig plants, producing 441,591 pounds of fruit. Alabama reports 68,703 fig plants, yielding 749,154 pounds of fruit. Mississippi had 46,896 fig plants, producing 206,709 pounds of fruit. Louisiana had 79,727 plants, producing 1,351,060 pounds of fruit. Texas had

221,032 plants which yielded 949,055 pounds of fruit. None of the other southern states report any figs in the census for 1920.

It is safe to say that in the majority of the states mentioned above the plants are all door-yard plantings or are to be found in small home orchards. There does not seem to be a general commercial planting of figs in the South except in Texas and Louisiana. In Louisiana there are six counties in the southwestern section along the Gulf Coast where the major plantings are to be found. South of

but his efforts have not yet been attended with success.

Problems to Consider.

There are several things that militate against the commercial fig industry in the South. One of them has been that the fresh fig is almost impossible of shipment. Particularly is this so when grown and produced in a climate as humid as that of the South. Then again, the fresh fig is so little known in the large centers of population that, were they successfully placed upon the markets, it

son, but even under these conditions, the fig growers of these sections, particularly in Texas, have developed the preserved fig industry and there has been located at several convenient places throughout the fig district preserving factories which will contract for the yield of an orchard through a period of years. The growers can then deliver their product to the central preserving plants and receive their money.

There are numerous varieties of figs grown throughout the South. Most commonly used for home are the Celestial, Brown Turkey, Black Ischia, White Ischia, Brunswick and Magnolia. Of these, the Celestial, which is sometimes called the little sugar fig, is about the most hardy and highest in quality. It may be successfully planted along the northern border of fig culture. It is small in size but makes an excellent preserve. The Brown Turkey is next as a favorite for home planting. The fruit is medium to large in size, the plant is hardy and it is a good and heavy cropper. The commercial fig of Texas is the Magnolia. The fruit is large and pyriform in shape. It is a good producer and produces almost a continuous crop. Synonyms of this variety, as given by Professor Starnes of the Georgia Experiment Station in bulletin No. 61, are Dalmation and White Smyrna.

The Propagation.

The propagation of the fig is a very simple process. In the spring before growth starts, or any time during the winter, cuttings may be made. These are usually of last year's growth and should be six to eight inches long. These cuttings are placed in the ground where they rapidly take root and within three years a good sized bush has been produced. The fig grows so readily from cuttings that wood two inches in diameter may be made to strike root. Cuttings this large, however, are not advisable. It is well to grow the cuttings in the nursery row for one season and then transplant them to their permanent place in the orchard. Fig bushes can be produced so rapidly that when one becomes sickly or weak in the orchard, it is a good plan to remove it immediately.

The commercial orchards are planted in well drained, fertile soil. Though the fig is a surface feeder, it is a large consumer of fertility and needs a strong soil with liberal fertilization, particularly this latter if the soil is at all poor. A limestone formation seems to be particularly adaptable for this fruit, and in many instances liming is recommended as a profitable procedure. The orchards that are now being planted in south Texas have about 150 trees to the acre. The plants are grown to the bush form. A good crop, approximately 50 percent of the normal, may be expected from a young plant two years old. From that time until the tree is ten to twelve years of age it gains in its bearing capacity. After it has passed this age the old wood seems to hamper its bearing proclivities and it is customary to cut these old trees down to the ground. In two years thereafter they are back again to almost normal bearing.

Growing Methods.

Clean cultivation is practised in the orchards. Fairly deep plowing, the maintenance of a surface mulch and the conservation of moisture is very essential in fig production as it is a plant that likes plenty of water. In order to insure satisfactory crops, spraying with Bordeaux mixture is necessary. From two to four or more sprays should be given, depending upon the season and the general condition of the plant. This spraying is against a fungus disease which is known as fig rust. In sandy soils figs are very subject to the depredations of nematode worms on their roots. This pest cannot, however, be

(Concluded on page 11)



A two-year-old fig orchard at Alvin, Texas.

Houston, in Texas, there are some five counties in which figs are planted and produced commercially. These commercial fig enterprises were under full swing and a high quality of fig preserve was being made prior to 1917; but during the winter of 1917 there was a severe freeze which wiped out many of the orchards. Following this freeze, in 1918 and 1919, the price of sugar was so high that it was not commercially profitable to

would take several years to cultivate the taste for this most delicious fruit. Secondly, the climatic conditions of the South have not been conducive to the development of a dried fig industry. Upon occasion some dried figs could be produced, but, generally speaking, all fig drying in the South would have to be through commercial evaporation which, of course, would add to the cost of production. Under the moist southern climate, figs have



Ten-acre fig orchard, Alvin, Texas.

put up fig preserves and the revivifying of the industry was delayed for several years. It is now on the increase.

Some reports have been circulated about a fig industry in the Carolinas. If this exists it is still a very infant industry commercially. There is in Florida one large commercial planting of Smyrna figs at Clearwater. The owner of this planting has been making strenuous efforts for several years past to naturalize the *Blastophaga*,

a tendency to ferment soon after attaining perfection. This fermenting tendency is more prevalent in those figs which stand erect on the branches, thereby permitting moisture to more readily enter through the eye of the fruit.

Under the Texas conditions and along the Gulf Coast in Louisiana there is ample moisture for the production of figs without irrigation. There is also a lot of sunshine and dry weather during the ripening sea-

Raisins For Export

by Fred K. Howard

FOREIGN trade in fruits and fruit products has always been the safety valve of American horticulture. It is little wonder that fruit growers throughout the nation are beginning to realize how valuable this export market was now that we have largely lost it. Students of foreign trade have been advocating active measures to regain these markets following the war, with apparent lack of success in practically all lines of fruit.

A report of the United States Department of Commerce appearing in the columns of the daily press, however, indicates that the raisin growers of California have at least partially solved the export puzzle. The report states that during the first eight months of 1922 the export of raisins was four times greater than for the corresponding period of 1921. This indicates that a market for raisins and other dried fruits can be found in foreign countries if proper measures are taken to secure the trade. The report means further that the fruit grower or distributor who viewed with apparent alarm the dropping off, or at least apparent stagnation of exports of American fruit, has much to hope for, if proper methods are adopted for exploiting American products. Raisins, of all American fruits, are practically the only product which showed a material increase in export volume. This is most startling because raisins are an old world fruit known and used in ancient and modern times by the people in Great Britain and Continental Europe. Frequent reference to this product is made in the Bible. It is probable that the returning Crusaders brought the fruit and an acquired taste for it to Great Britain. At any rate raisins are by no means a new product in most foreign markets. Foreign producing countries, particularly Southern Spain, Greece and Asia Minor, have in the past, and are at the present time exporting large quantities of raisins and currants to the United States and Canada.

A preferential trade agreement exists, of course, between Great Brit-

The story of how this was accomplished should be of interest to every American fruit grower. The principle back of trade extension on the part of the California raisin growers is co-operation. Nearly all of the raisins produced in America are grown in the great interior valleys of California—the Sacramento and San Joaquin. Ninety per cent of the producers band-

At the time the raisin growers organized in California the world production was approximately 145,000 tons and the average crop produced in California in the five years immediately preceding 1912 was about 70,000 tons.

It has been said by those who are supposed to know that almost complete control of the market of a prod-

cause of the practical certainty of good annual production and of intelligent marketing, thus practically insuring a fair price throughout a term of years. In other words, California raisin producers had eliminated the gamble from their business. The result of this migration was to very rapidly increase acreage and, therefore, the production of California raisins. From an average of 70,000 tons in 1912 production in California has increased to better than 225,000 tons in 1922 with sufficient new acreage already planted or contemplated to nearly double this production by 1927.

Other countries, notably Australia and South Africa, shining perhaps in the reflected light of California raisin growers' sun, have also increased their acreage of raisins and statistics show that the world production of this crop has trebled since 1912. As a consequence the organized California raisin producers find themselves in a peculiar situation; a situation which clearly demonstrates that the law of supply and demand will rule in agriculture regardless of organization. Organization, of course, can do several things which are highly important in increasing consumptive demand, without working a hardship on the consumers. First, it can standardize the product received from its members; it can advertise this product, exploiting new channels and demonstrating new methods of use. By directed and intensive salesmanship it can reap the full benefit of its advertising by securing uniform distribution and exploitation of the single brand of the organization.

Fundamentals Recognized.

In the case of the California raisin this type of work has been done constantly since 1913. Each year's advertising appropriation being larger than that of the previous year. The result was increased per capita consumption in the United States up to, and in some sections above, the per capita consumption of raisins with Great Britain, the largest raisin con-



California raisins on display at a shop in Yokohama, Japan.

ed themselves together in 1912 for the co-operative marketing of their crop. It is probable that very little thought was given to the possibility of invading the foreign markets with their product at that time.

The motive for organization was apparently only to increase the per capita consumption of American raisins in the United States. The story of how well this was accomplished through standardization of the

uct stifles competition; that it savors of trust methods. In fact the California raisin growers suffered persecution by the United States Department of Justice because the government claimed that trust methods had been used; that competition was stifled; that consumers had suffered thereby. It is true that the results of organized effort returned to the individual raisin producer of California a greater net income from his in-



California raisins being sold from a push cart in England—An interesting method of retailing.



Display window in Shanghai, China, showing hats and other merchandise with California raisins.

ain and Australia as well as the British Colonies in South Africa. Long established trade channels also resulted in the marketing of huge tonnages every year from Algeria, the Mediterranean countries, including Greece and Asia Minor; yet in spite of this fact in the eight months immediately following aggressive trade extension on the part of California raisin growers in foreign countries, the export of raisins increased from approximately seven million pounds to twenty-nine million pounds.

product, through advertising and through salesmanship, is one of the romances of American business. Today the raisin growers of California are spending a larger sum in advertising their product than is used to advertise any other single food commodity in the world. The advertising budget of the co-operative raisin growers for the 1922-1923 season is over \$2,500,000. The reason for this advertising appropriation is to maintain and create greater consumer demand for raisins.

vestment than he had ever enjoyed in the days of unorganized production. This fact alone encouraged producers in other lines to migrate to the great valleys of California where millions of acres of fertile and productive lands were, and still are, uncultivated—lands which awaited only the hand of the pioneer to convert them from desert waste to highly productive vineyards and orchards. It is probable that settlers were lured not so much by the apparent high prices realized by the raisin growers but be-

suming country in the world. This alone, however, could not solve the problem of marketing the California crop, which, as indicated above, has increased so rapidly. The salvation of the raisin industry therefore apparently depended on the exploitation of foreign markets. Business men without foreign trade experience held the opinion that export trade involves a business practice distinctly at variance with those methods used at home. That the ordinary rules of the

(Concluded on page 17)

Maryland Grape Training Experiments

"INFLUENCE of Grape Training on Fruit Production" is the title of Bulletin No. 250, issued by the Maryland Agricultural Experiment Station and written by E. C. Auchter and W. R. Ballard. It would not be possible for all our readers interested in grapes to secure this bulletin and we are, therefore, going to make extracts of the most important parts and are going to give photographs of the two systems of training which are giving the best results.

Fortunately the grape thrives well when subjected to heavy cutting or pruning. No other deciduous fruits will withstand as much cutting and still continue to produce as profitable crops. Growers have learned that they can prune and train their vines to suit their fancy and still expect fair yields of fruit. It is, therefore, no wonder that a great many different systems of training and trellising have originated in different regions. Certain training systems may be especially adapted to some soils and to some varieties.

The method of pruning the grape is commonly confused with the system of training. Pruning is essentially a thinning process and has to do with the removal of such wood as will insure better and larger fruit upon the remaining portions of the vine, while training refers to the disposition of the different parts of the vine upon the trellis. In order to prune grapes intelligently, one should know the style of trellis upon which the vines will be trained.

The grape forms a bud in the summer in the axils of the leaves on the growing shoots. The following spring these shoots, now being one year old, are called canes. From the buds on these canes new shoots develop in the spring. The fruit is borne in a few clusters near the base of the current season's shoots. From one to five clusters may form on each shoot. Usually about two good clusters are developed on the average. Wood older than one year does not bear fruit, and shoots which grow from wood older than one year generally are non-fruitful. Canes of medium size, about the size of a lead pencil, with plump, round buds, are generally more desirable than much larger or smaller ones.

A grape vine can produce only a limited amount of good fruit. The number of clusters, of good size and quality, which a vine can mature, depends upon such factors as age, vigor, variety, size of vine, soil type and soil treatment. Generally speaking, average healthy vines should produce from sixty to eighty clusters. One can conclude, then, that in pruning the grape the bearing wood must be removed every year from the desirable one-year-old canes; all wood over one year old and not necessary for the framework of the vine should be re-

moved; renewal spurs, from which new canes can be developed, should be left and a large amount of surplus new wood must be pruned off each year in order to leave the desirable number of buds, from which the season's crop will be developed.

Four Years' Experiments.

The grape training experiments have been carried on at the Maryland Station since 1916, with the following varieties: Worden, Concord, Lurie, Moore's Early, Niagara and Wyoming. The following systems of training were tested: Single Stem Four Cane Kniffin, Single Stem Two Cane Kniffin, Two Wire Umbrella or Umbrella Kniffin, Munson and the Fan. In addition to showing the yields recorded under these systems and giving a description of the systems, the following other methods have been described and discussed: Two Trunk Kniffin, Y Trunk Kniffin, Horizontal Arm

of training, the additional expense and time of erecting the trellis required, as well as the greater difficulty of picking and spraying such vines, makes this method inferior, as a rule, to the Single Stem Four Cane Kniffin.

Vines trained according to the Two Cane Kniffin and Umbrella Kniffin Systems did not yield as large crops as those trained by the Four Cane Kniffin or Munson System. As a general rule, the canes were not vigorous enough so that a sufficient number of good buds could be secured on the two canes selected so that the total yields would equal those from the same number of buds distributed over four shorter canes in the Four Cane Kniffin System.

Vines trained by the Fan System were not as productive as those trained by the Munson or Four Cane Kniffin Systems, but outyielded those trained by the Two Cane or Umbrella

are the most desirable, especially for the vigorous growing varieties, such as Concord or Worden. Weaker growing varieties, such as the Delaware, usually do well under such systems as the Chautauqua or High Renewal, in which the shoots are trained up and tied during the summer.

Pruning can be done at any time after leaf fall in the autumn and before the buds swell in the spring. Usually a better selection of mature canes and those free from any winter injury can be made in the spring after danger of freezes is over.

The practice of summer pinching or topping of vines is a questionable one and summer pruning should be practiced only under exceptional conditions in Maryland vineyards.

Our readers will doubtless be interested in just how the experimenters at the Maryland Experiment Station handled the so-called Munson system and the Single Stem Four Cane Kniffin. A description of these two methods by the authors of the bulletin is as follows:

The Munson System.

In making the trellis for the Munson System, posts are set twenty-four feet apart. Three vines are grown between each two posts. No vine is nearer than four feet from any post. Heavy end posts of about eight feet in length, of such durable wood as Cedar, Black Locust, or White Oak should be used. These should be set about three feet in the ground, well tamped in and strongly braced. It would be well also to treat the end of the post by dipping in creosote or some similar preservative before setting in the ground. The intermediate posts can be lighter, somewhat shorter and set somewhat more shallow.

The Munson System has three wires, but instead of being placed one above the other as in the Fan System, cross-bars are used to form an overhead canopy. The middle wire should be fastened to posts at a height of four feet. Holes are bored in the posts and No. 10 galvanized wire is run through these in the direction of the row. Cross-bars of two-by-four lumber, twenty inches long should rest upon this middle wire and be nailed to the posts. Wires should run from the ends of these arms to the posts to act as braces. The two lateral wires should rest in notches near the end of these arms. They may be held in place by wrapping the ends of the brace wires around them. This will bring the outside wires about four inches above the middle wire and about ten inches to the right and left. (Fig. 2.)

If the vine is vigorous, a cane is brought to the middle wire the third season and tied. Later pruning consists of choosing canes near the head of the vine each year and training

(Concluded on page 30)



Fig. 1—Vine trained by the Munson System.

Spur, High Renewal, Kenka High Renewal and Chautauqua.

Under Maryland conditions, the Single Stem four Cane Kniffin System appears to be the most satisfactory method of training. In our tests, the best yields, as a whole, were secured from vines trained according to this system. The fruit matured well, the clusters were of high grade, no summer tying of shoots was necessary, the fruit could be picked easily and spraying and cultivation could be easily and efficiently done. It is questionable if the Two Trunk Kniffin and Y Trunk Kniffin Systems have any advantages over this system, and they do have apparent disadvantages.

Although the vines yielded nearly as much fruit under the Munson system

Kniffin System. The lower fruit in this system became splashed with mud during hard rains and both fruit and vines were more easily injured with cultivating instruments. The old spurs were objectionable, as was the summer tying of shoots.

Those systems, such as the Horizontal Arm Spur, dependent on spurs for the production of bearing shoots are generally not as productive as those in which the shoots develop from longer canes. In general this is due to the fact that the first three buds on a cane are generally less productive than those farther from the base.

Generally speaking, those methods in which the shoots droop naturally and are not tied up in the summer,

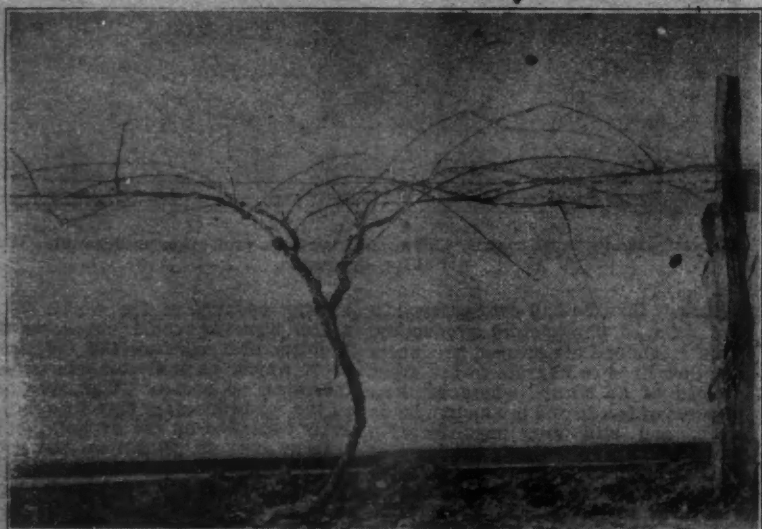


Fig. 2—Same vine as shown in Fig. 1. Picture shows appearance of unpruned vine during dormant period of the following winter.

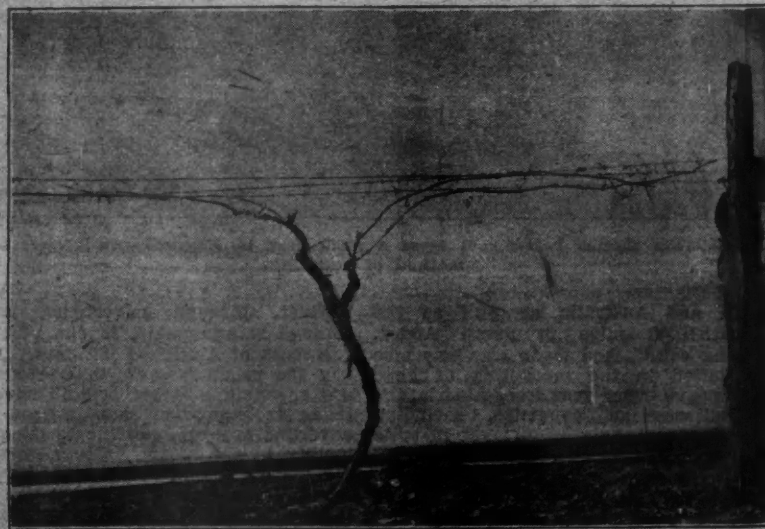


Fig. 3—Same vine as shown in Fig. 2 after pruning according to the Munson System. Note renewal spurs left.



SAMUEL ADAMS

Editorial Problems of the Day



C. I. LEWIS

Crop Statistics

ACCURATE crop statistics are very essential to good marketing. There are two factors, however, engaged in predicting crop statistics as regards apples, for example, that can change their methods to advantage. We refer to the present system of the United States Department of Agriculture in reporting the apple crop of the country on the one hand and the tendency to exaggerate crops by certain communities or individuals on the other hand. Probably by far the best reports of the apple crop situation from month to month are those issued by the International Apple Shippers' Association, which, however, are confined entirely to their membership. These statistics for years have been famous because of their accuracy and are today the best reports to be found in America.

The main objections found to the reports from the government, as issued by the Department of Agriculture, are their double reporting system. They go to considerable length to report the total crop of apples in the United States for a given year, then down near the bottom of the paragraph they say that the commercial crop is only so much. The commercial crop, according to government reports, only represents 15 or 20 per cent of the total crop. In other words, 75 per cent at least of the crop reported as total is of non-commercial value.

Why continue such a farce indefinitely when it can only redound to the detriment of the fruit industry. Reporting on apples is somewhat different than it would be on grain and livestock. For example, a man may raise hay and have a few loads to sell. He raises a little corn, more than he feeds to his stock, and it gets to the market; but he may be one of the large number of farmers who has a home orchard and does not take care of the same, his crop has no commercial value. The total crop, seemingly, is based on the total number of bearing trees in the United States and what the average crop would be for that season. That is not a good criterion for the commercial crop. Figures gathered from home orchards and non-commercial orchards of fruit which does not enter the channels of trade, has little of interest in it to the commercial apple grower, the jobber, or retailer. Growers in some communities because of local pride like to boast in the early spring on how large the crop is going to be. They do not realize what the real dangers of over-estimating are. In the first place, it must be remembered that it is the total crop produced and not the proportion of the crop which reaches the market and fixes the price. It is unfortunate that this condition exists but that is the case at the present time. For example, this year 75 million bushels of potatoes which were probably not dug at all but allowed to remain in the ground and rot are the potatoes which early fixed the price for the American potato crop. The apple crop this year was reported as being rather large, and as a result the prices were somewhat low. Nevertheless, some markets received practically no more apples than they did a year ago, yet the price was much lower.

The second danger in over-estimating is

that these figures can be and often are used by buyers and others against the growers. All they have to do is to quote the grower's own figures or the government's total figures to show that the crop is huge, whereas at the same time they may have access to the International Apple Shippers' figures, which are generally correct. We want the truth and nothing but the truth upon which to guide our marketing activities. We can see no good in reporting huge crops of apples which never enter into commercial channels. What the grower, the buyer and all concerned want to know is the crop which will naturally enter the channels of trade. The government has promised to take one step which will be of great benefit to the growers and that is, that they will attempt to segregate the tonnage according to seasons. For example, apples will be divided into summer, fall and winter varieties. Had this been done this year it would have been a great help to the industry. The American Pomological Society is responsible for this action on the part of the Department of Agriculture. It has been suggested that conferences be called to talk this matter over but we can see very little to confer about. Fruit growers for years have simply wanted the commercial figures. Why give them anything else?

Better Terminals

ONE of the greatest needs of our fruit industry is to have better terminal facilities in our large centers of consumption. At the present time most of these facilities are badly congested. Much confusion and unnecessary expense arise from this congestion. It is gratifying to learn that in New York City, for example, this question is being given careful consideration. It is realized by all that trackage in the city of New York must be limited. There are steps being taken now to study the possibility of having large terminals on the Jersey side and to have auto trucks, tunnels, or bridges to carry fruits and other produce from the Jersey side to the various markets in New York.

It is extremely gratifying to note that the Federal Bureau of Agricultural Economics of the Department of Agriculture is making a special study of this problem in New York City. Data is being collected on the quantity and direction of the fruits and vegetables through the port of New York in order to ascertain the amount of produce brought into the district by each principal carrier, specifying the point of delivery as far as possible, the amounts sold through each auction company, principally of fruit; the amounts received and sold by each principal carload receiver, both through auction and by private sale; amounts sold each buyer on the auction floor, including the point of delivery of sale, and amounts sold to buyers and principal jobbing markets by private as well as public auction sale. Also, this same Bureau is making a study to determine the terminal railroad handling costs, to ascertain the cost in motor trucking or horse hauling the produce. The Bureau is also starting an introductory preliminary survey on certain selected varieties of produce which will give information on

some specific marketing data and a knowledge of particular channels of distribution.

After this work is finished in New York undoubtedly the Bureau will also attack the problems in other markets. If the Department of Agriculture can improve the handling of fruit and vegetables in our great terminals, they will render the industry a greatly appreciated service. We ought to realize that we must increase our efficiency and reduce our costs and it is only by a careful study of these problems that we can arrive at a fair solution.

Raisin Exports

AN article in this issue showing how the Sun-Maid Raisin Growers' Association of California has developed a remarkable export market at a time when many claimed there were no rainbows on the export horizon should be read by every reader of the AMERICAN FRUIT GROWER MAGAZINE because the methods used by the Sun-Maid Raisin Growers, as carefully described in this article, can be copied to great advantage by the exporters of all foodstuffs. Agricultural exports have been larger in the past year or two than they were before the war, largely due to the elimination of Russia from the export field. In a relatively few years, however, Europe will probably be producing 95 per cent of her own foodstuffs and the export opportunity for certain American foodstuffs may become greatly restricted. Fruit, however, represents a special field. American enterprise before the war built up a steadily increasing demand for fresh, dried and canned fruit. This produce, well packed and properly merchandised was forcing America into a market formerly usurped entirely by Mediterranean countries. The same enterprise and careful study of European needs should result in an extended market in Europe for our fruit and fruit products. We will always have a tremendous competition from the Mediterranean countries with certain fruits, nuts and by-products, but these countries are considerably behind America in methods of growing, packing, handling and merchandising. We can all learn from the Sun-Maid Raisin Growers.

Our Friends

WE have been receiving hundreds of letters and personal compliments on our February edition, which was our Annual Spray Number. Likewise, every edition is bringing us a very large number of complimentary letters. For these letters we are deeply gratified and take this occasion to thank the thousands of readers who appreciate what we are trying to do for our great fruit industry.

We also greatly appreciate those letters from our subscribers that give us suggestions as to how we can improve our paper and thus better serve our great army of readers. We also greatly appreciate those letters which we receive from time to time from our numerous subscribers citing some personal experience in their orchard work which they have found has been of great benefit to them and which they are willing to pass on to their fellow fruit growers.

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W-11

Yakima Peach Growers Are Well Organized

YAKIMA Valley peach growers are determined that peach growing in their valley shall not decline and that growers shall receive a profitable price for their peaches. The main variety grown is the Elberta. The prices have fluctuated so much and the crop at times has been so unprofitable that the average crop which a few years ago ranged from 2,000 to 2,200 cars now represents only a tonnage of 1,000 to 1,200 cars. In the years 1910-15 the prices per packed box ranged from 15 to 30 cents. The following prices were re-

ceived in succeeding years: 1916, 35c; 1917, 52½c; 1918, 75c; 1919, 67c; 1920, \$1.25 and 1921, 75c. The 1920 crop was small on account of a freeze but many of the dealers sold short at 75c per box.

The threatened railroad strike had a bad effect on the soft fruit market on the Pacific Coast. Heretofore it has been the custom to sell the crop in advance of the harvest season, the crop generally being sold before August 8th, picking generally starting about September 1st. Owing to railroad strike conditions, however, eastern buyers could not be sure of delivery in 1922 and would not buy. As is customary in such cases, the growers held the sack. Early prices were

quoted at 75c, later dropping to 50c. Very few sales were made at that figure, however. When it was found that it would be difficult to move the 1922 crop, a pool was formed and all the peaches were placed in the hands of a central committee, who handled the sales. These men were all peach growers of large tonnage, as follows: H. H. Lombard, of Lombard & Horsley Co., 100,000 boxes; F. E. Thompson, of Thompson Fruit Co., 90,000 boxes; E. R. Ballard, of Ballard Bros., 15,000 boxes; Bruce Wees, 10,000 boxes and J. A. Bourgaize, 5,000 boxes. The committee had very little time in which to work and had practically no opportunity to perfect a sales organization. The returns for the sea-

son were 41c a box, which the committee and other pool members believe is easily 10c higher than they would have received without a pool. The results have been so satisfactory that a permanent organization is being perfected for the marketing of Yakima Valley peaches. A thousand shares of stock at \$5 a share are being issued and the organization will be run without profit. A five-year contract is secured from each member, which will give the association an opportunity to become stabilized and thoroughly organized. The cost of operation is estimated at 5c a box, office expense, 1c; loading and inspecting, 1c; brokerage, 2c and contingencies, 1c. No attempt was to be made at present for centralized packing plants. It is believed, however, that these will come later. The organization expects to co-operate with the Yakima County Horticultural Union and the Yakima Fruit Growers' Association. It is believed that these three organizations, working together, should be able to secure a fair price for their product and stabilize the peach industry of the Yakima Valley.

The annual meeting of the Yakima Peach Growers, Inc., was held recently at Donald and the following members were elected to the board of trustees: Bruce Wees, Donald; F. E. Thompson of the Thompson Fruit Co., Yakima; E. R. Ballard, Zillah, and John Bourgaize, Zillah. H. H. Lombard of the Lombard & Horsley Co., has been appointed by Director of Agriculture E. L. French to represent the public on the board.

Advertising Plans for Strawberry Crop

STRAWBERRY growers and dealers will undoubtedly benefit greatly this coming season by the campaign which the Western Fruit Jobbers are going to put on. This organization has been showing much activity of late along advertising lines and did in the past few years a great deal of work to stimulate apple consumption. It is gratifying to know that this same organization is going to put on an extensive strawberry campaign. Display advertisements will appear in daily newspapers in 15 to 20 principal cities of the United States. Attention will be called to the large supply and the high quality and housewives will be encouraged to can a heavy tonnage. News items will be sent to papers suggesting various uses and endeavoring to induce the newspapers to support the "Can Your Own" movement. The Associated Press and other news agencies will be given statistical information; the retail trade journals will be given abundant information concerning the movement of strawberries; the trade press serving the fruit and vegetable industry will be given information concerning the movement of strawberries and the securing of their co-operation in bringing it to the attention of every consuming market; the 600 members of the Western Fruit Jobbers' Association will receive advertising material to be used in their local campaigns; jobbers generally will be given window displays and banners for retail store windows; letters will be sent to domestic science teachers in schools and colleges calling special attention to the strawberry and encouraging home canning, and letters will be sent to all fruit jobbers on the association membership list, advising them of the campaign and urging them to show every possible preference to the shippers who are helping to develop the market. Even restaurants, hotels and dining cars will not be overlooked, strawberries will be featured in the menus during the entire season. The campaign is being financed on the basis of 2c a crate. The grower and the shipper will put up ½c each, the carlot receiver ¼c, while the local jobber will pay the remaining ¼c.

Subscribe for The American Fruit Grower Magazine. Three years for one dollar.

The Fig in the South

(Continued from page 6)

controlled except through the avoiding of planting in infested soils. Figs that are kept closely gathered are not injured by the fig eating beetle, though about the homes sometimes the birds and fig eating beetles, commonly called "June bugs," may destroy lots of fruit.

Figs may be grown either to the tree or bush form. The latter is preferred. Little pruning is required except the removal of injured and dead shoots and occasional thinning out of the plant. When a bush gets too high, it may be cut back if desired, even down to the ground. Along the northern limit of fig growth in the South it is well to plant on the southern side of a house, fence or building and, where possible, to give good protection to the roots against the cold of winter. When the plants are frozen down, cut off the dead wood and, unless there are two severe winters in succession, the figs will quickly recover.

A Future Industry.

The southern commercial fig is still a crop of the future. Reports from the center of the fig industry in Texas show that contracts are being made for figs at six cents a pound, which is approximately \$3.00 per bushel, in the orchard. In the early days of the industry two or three cents per pound was paid in the orchard. A commercial crop of 100,000 pounds was reported in that state in 1922 from a hundred acre orchard, set in the spring of 1921. Profits from \$600 to \$800 per acre, on young orchards, per year are being shown from time to time. Of course everyone cannot expect to make this much out of fig planting, but there is no reason why a well cared for orchard in figs, where the preserving industry has already become established, should not be made to yield handsome returns within two or three years after planting.

Work is now being conducted in some of the southern states toward the breeding of figs suitable for southern climatic conditions. At Brunswick, Georgia, the Blastophaga grossorum has passed through three winters on a single capri tree in that city. Rather extensive plantings of varieties of capri figs are now being grown to insure a succession and continuation of crops of capri figs so that the naturalization of the Blastophaga can be thoroughly effected. Last year in the city of Savannah figs were produced on a Smyrna tree eighteen years old that never before had produced a crop. This was done by transferring Blastophaga from Brunswick to Savannah and placing them in this Smyrna tree. With the development of better figs through pollination it is possible to foresee the time when commercially evaporated figs from the South will be found upon the markets of the United States, and in the South there will be a new industry partially taking the place of the boll weevil infested cotton.

Fighting Rabbits

RABBITS are a terrible orchard pest in some sections of the country. Just a few rabbits can raise havoc in a young orchard. Where one can afford it, there is probably nothing superior to a rabbit-proof fence. Spraying the trunks of the trees with strong lime and sulphur frequently during the winter tends to keep the rabbits away. Occasionally smearing the trunks of the trees with hog or sheep liver is said to be efficient. One can put on old heavy gloves to smear the liver on the trees. In parts of the Pacific Coast where rabbits are very bad, they use a whitewash to which aloes has been added. This is said to be quite efficient. The formula consists of lime, 20 pounds, and tallow, 4 pounds, with enough water to make it flow well. This formula frequently contains 5 pounds of salt but this should not be used where rabbits are abundant as it tends to attract the rabbits. In place of the salt use a small amount of commercial aloes.



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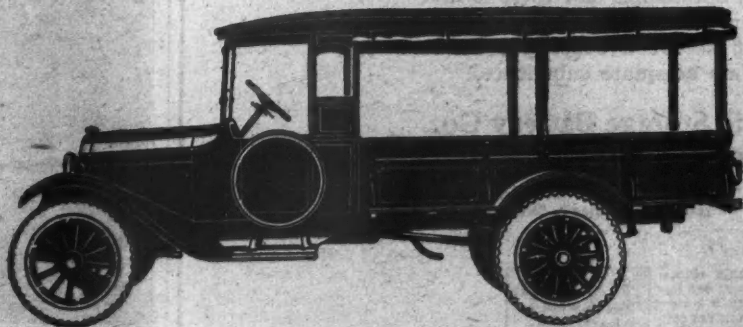
Give this truck a reasonable opportunity to prove its merit, and the future equipment question is usually settled for all time.

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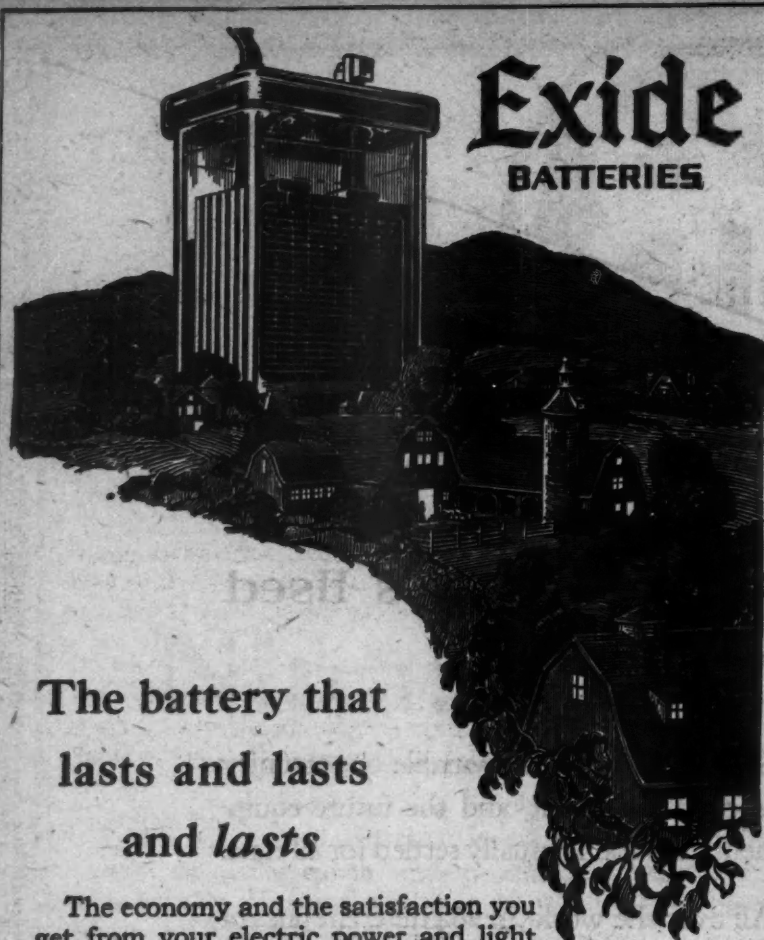
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Is the Spraygun a Success?

By John C. Hull, Inventor of the Spraygun

EVERYONE who sprayed in the spring of 1916 used rods and nozzles, the only known devices for distribution of spray at that time.

When the spraygun made its appearance late in the summer of 1916 and in the spring of 1917 it was hailed with joy, but it is a matter of record that the spraygun was intended to be used only on more powerful sprayers than were then being used. Evidence of

cheery words about liquid spraying before the spraygun appeared. Before two years had passed several other sprayguns were found on the market, practically all sprayer companies soon made the spraygun a part of the standard sprayer equipment. Growers everywhere bought sprayguns for their old sprayers or accepted them gladly with new machines. During all this deluge of spraygun popularity the adaptability,



The Old Way, Tower and Spray Pole.

this is found in the fact that in the fall of 1916 and in the spraying season of 1917 more than one hundred big 10 H. P. sprayers were made and sold by one firm for use in connection with the spraygun—the first big sprayers

ity, proper use and application of this new device were entirely lost sight of and without a doubt, some of the growers who are now going back to rods and nozzles never should have used the spraygun at all.



The New System with Spray Gun.

ever built and sold. Many growers who thought they could not purchase the big machine, obtained the guns and tried them on their regular sprayers. Without doubt, much of the favor which the guns created was due to its being a new device or method which made spraying much easier. Every one admits that there were very few

Failures have been due to one or more of the following causes:

1. Insufficient pressure and capacity of the power sprayer, or interference by undersized valves, hose and fittings;
2. Incapable man handling the gun;
3. Imperfect working or poorly ad-

signed gun that lacks capacity, or does not give even, uniform discharge.

The first and second causes, above, are the source of most failures.

It is not force of the stream alone that carries the fine spray from a spraygun into the tree tops; it is both force and volume. A rapid velocity air draft is created by the millions of small drops of liquid discharged in rapid succession. This is illustrated by the fact that one of these fine drops of spray discharged alone at 300 lbs. pressure would not travel 6 ft. high, because of friction, although these same fine drops discharged, under same pressure, at the rate of 30 gallons per minute, are easily carried 40 ft. into the air by this rapid velocity air draft which eliminates the air friction encountered by the single drop referred to. Hence, the necessity of sufficient capacity in conjunction with high pressure in the spraying machine.

Granting the grower has a sprayer capable of delivering sufficient volume and pressure, he must not lose that pressure after it is developed at the pump, for a difference of 100 lbs. pressure between pump and spraygun while the spraygun is wide open is a serious interference and will always cause a coarse spray. Be sure this interference or friction is the smallest possible, which means delivering nearly 100 per cent of the pressure and volume of the power sprayer from the spraygun.

The well known LeRoy Childs, superintendent of the Hood River Experiment Station, in a recent article, says in part: "No improvement of fundamental nature occurred in the application of spray until the appearance of the spraygun." Further on he claims: "We can state emphatically and without reservation that the gun cannot be used on every spray outfit. The dissatisfaction existing among growers today is probably due largely to the fact that these growers have tried to use them under all sorts of conditions. It appeals to them because of the ease of operation and the speed with which the spraying can be accomplished."

"In fact, many have followed the lines of least resistance, have used the gun, disregarding entirely the fundamental principles that must be present in order to obtain the benefits that this instrument offers." And further on he states: "The spraygun was first made to be a part of a high-powered outfit, and there it rightfully belongs. Adaption to small outfits was not in the minds of the originators of the spraygun, and the orchardists who have used it with poor success should, in all justice to the spraygun, shoulder the blame. Right from the start the gun has given a good account of itself. The control of orchard troubles obtained by orchardists using high-powered outfits has been more complete with the gun than was obtained with rods and nozzles." No one would care to dispute one so thorough as Mr. Childs.

Some of the many rules for successful spraying are: An abundance of power and capacity, thorough agitation, fittings, valves and couplings having large hole or bore, a good hose with smooth, uniform bore, and a spraygun that is so properly made that a large volume of uniform, fine mist-like spray can be discharged at rapid velocity to overcome side winds and to create as much velocity as possible for reaching distance and for movement of leaves, twigs and branches, thus greatly assisting in making a certain and thorough application.

One always should use the widest spray at close range, using a gun that has quick and easy adjustment for sudden changes or instant shutoff. Never use a discharge disc, having less than 5 gallons per minute capacity, on large trees, and always in the hand of a man who will use it correctly, remembering that not only is more capacity faster but more capacity at high pressure is always better.

That the spraygun is successful when properly applied and used is proven by the thousands of growers who have been very successful with

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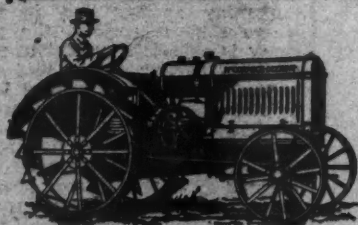
Every important part [engine, transmission, steering assembly, etc.] of the McCormick-Deering 15-30 is built and tested as a separate unit, then bolted securely into place in the rigid main frame. Easily removed and repaired in the field or shop. No unnecessary delay and expense.

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guns and who sincerely believe they will never go back to rods and nozzles. It is safe to say that most of the first prize and sweepstakes on liquid sprayed fruit grown each year has been sprayed entirely by the use of the spraygun.

West Virginia Society

THE West Virginia Horticultural Society at its recent annual meeting went on record endorsing the proposed four-state combined meeting and apple show to be held in Washington next December. The states which were voted to participate are West Virginia, Virginia, Maryland and Pennsylvania. The plan is to put a show on typical to those now being held on the Pacific Coast and in Council Bluffs. Each state will, however, in addition hold separate horticultural meetings.

The society went on record for four or five constructive resolutions. A committee was appointed to investigate the needs of the State University College of Agriculture. A re-

quest was made of the West Virginia legislature for appropriations to complete the State community demonstration packing plant at Inwood. It was voted to extend the "Johnny Appleseed Brand" of apples and to have them packed in other sections of the state. It was also voted to extend the weather spray service, whereby growers are warned of impending radical weather changes during the spraying season.

At the annual banquet, Representative George W. Johnson went on record in declaring that railroad rates must be reduced if the fruit industry of that section of the United States is to be successful. He felt that eastern figures are too high at present in comparison with western figures.

Gray Silver, Washington representative of the American Farm Bureau Federation, recounted beneficial legislation especially along financial lines. He spoke in favor of a depletion tax for West Virginia and the development of the water power resources of the state.

Nelson R. Peet, of Rochester, N.

Y., gave one of his characteristic talks on co-operative marketing. This was well received.

The University of West Virginia was well represented on the program, the new dean of the school of agriculture, George R. Lyman, being present.

H. S. Vandervort spoke on the extension of the spray program to other sections of the state; E. C. Sherwood on "Scab Control"; Dr. N. J. Giddings, "Sooty Blotch Control"; Dr. L. M. Peairs, "Aphis Control"; W. S. Hough, "The Third Brood Codling Moth"; Dr. M. J. Dorsey, "Fertilization in Relation to Fruit Development," and Dr. Henry Granger Knight, "The Place of Research in the Agricultural Program."

Other speakers were H. W. Miller, who talked on "Common Storage for Apples," Hugh W. Prettyman on "The Development and Extension of the Johnny Appleseed Brand," and H. C. Hetzel on "Cover Cropping to Maintain Soil Fertility in the Orchard."

All who attended the meeting were pleased with the constructive program.



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No Truck Farmer, Fruit Raiser or Berry Grower Can Afford to Side Step Proved Economical Farm Methods.

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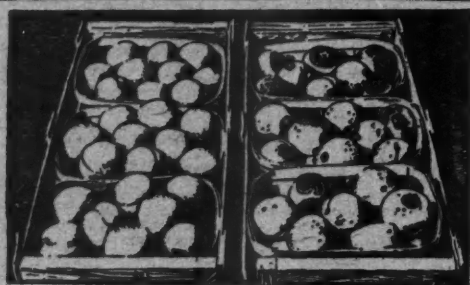
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required culling at a heavy loss. A large number of growers reported that when all the peaches of untreated lots had rotted, $\frac{1}{4}$ to $\frac{1}{2}$ of the treated lots were still sound. In one of our own tests, we treated several bunches of grapes—Delaware, Niagara and Concord—and laid them away without sun or heat with the result that they dried up to raisins. A Florida grower treated a shipment of beans which netted him \$2.00 per hamper, while a check shipment was worthless upon arrival at market. No matter how busy you are at picking time, or how difficult it may seem to take on other work, you will make more money if you deliver to market in good condition what you ship, even if you leave the rest of the crop to rot on the trees or vines.

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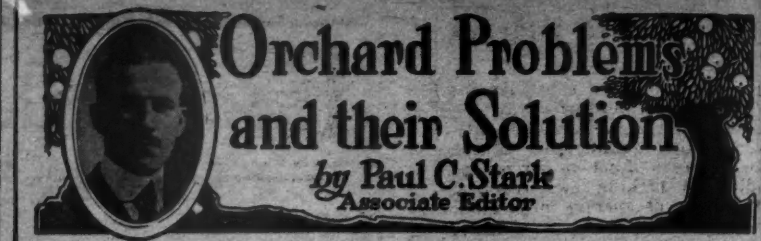
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A Better Summer Spray



Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

Apple Tree Borer

Please let me know the best time to get the borers out of apple trees. I have had some trouble with a borer that tunnels just under the surface of the bark.—T. L. M., Indiana.

THE Flat-head Apple Tree Borer is the one doing the damage that you describe as it works just underneath the bark of the tree, whereas the round headed apple tree borer tunnels into the heart wood. Most of the borers are usually found around the base of the trunk. The best method of controlling apple tree borers is cutting them out twice a year with a sharp knife or using a pliable wire to shove down the burrow. Be sure to get the borers out of your trees early this spring before they have a chance to do much damage and then inspect again the latter part of August or first of September before the young borers get established. The presence of the borer in the late summer is indicated by a dark greasy looking spot and the young borer can be nicked out with a sharp knife before it has a chance to do any damage.

The Pre-Pink Spray

I have heard it advised recently to make an extra spray for apple scab to precede the pink spray. Will this take the place of the regular pink spray?—M. J. B., Wisconsin.

THE pre-pink spray as advocated in a more complete spraying program to combat the apple scab, is merely an additional (extra) spray. Owing to the fact that the new leaf and flower parts are rapidly enlarging at this time, it is unsafe to omit the pink spray even though it may follow the former spraying but a few days. During rainy springs and in sections where scab is serious, the pre-pink spray is especially useful in securing an early barrier on the leaf surfaces of the opening buds against infection by the scab spores which are being discharged constantly from last year's leaves on the ground. By preventing this early infection of apple scab by keeping an unbroken coat of spray on the tender leaf and flower parts, one has gone a long way toward insuring a crop of clean fruit.

Use of Spreader

Will you please inform me whether I should use a spreader in my spray mixture? I have read no definite recommendations for its use.—O. B., Kentucky.

THE use of spreaders in spray mixtures is fast passing out of the experimental stage. At the present time many of the colleges and experiment stations are working on the problem but few have yet gone further than to suggest that spreaders may have considerable value. Calcium Caseinate is the most widely talked of spreader in use at the present time put out commercially under the name of Kayso.

The theory in the use of spreaders is based on the fact that the spray mixture thus prepared makes a more complete covering over the surfaces. This not only insures less possible chance for infection by fungus spores and insect pests, but on certain varieties where russetting is more or less common, injuries of this kind are less likely because of the elimination of large drops collecting on a single point of the fruit's surface.

The Casein spreader is also shown to be of value when used with the dry mixed Lime-Sulphur and also with the Arsenate of Lead insecticide as it tends to hold these materials in suspension.

In the light of the experiences of fruit growers and experiment stations, particularly in the far west, up to the present time, I would advise that you

give the spreader a trial if you have not already done so. There is much to be said in favor of its use and I expect to use it in my own orchard.

Age of Tree

I am expecting to plant an apple orchard on a 12-acre plot on my farm. I have practically decided on the varieties to plant but I am not sure whether I should plant the two-year-old or one-year trees. I noticed the article by you and Prof. Lewis in the last issue of American Fruit Grower on the subject of the Modified Leader method of pruning and it seems to me that this is the proper method to follow. Would you please give me advantages and disadvantages of the two-year and the one-year apple trees if the modified leader type of pruning is to be followed.—G. B. S., Mass.

FROM my observations in various orchard sections and my experience in my own orchard, I would much prefer using a one-year tree compared to the two-year as I expect to follow the modified leader type of pruning. However, this applies only in case you are able to get good big strong-rooted, thrifty trees and any references to advantages of the one-year refers to strong one-year trees.

In the one-year tree you have a chance to head back to just the point you desire and develop the side branches, well spaced and properly located. With the two-year tree this spacing is done in the nursery and in many cases the limbs are entirely too close together to form a good modified leader tree. A one-year tree in my experience at the end of several years' growth will be just as large as the older trees because it has a better balance between root and top and seems to actually have more vigor.

It is a well known fact that the younger a tree is, the easier it is to move and the less shock in transplanting. If you happen to have a drought the year following the planting of your orchard, your trees will be much less affected by the drought if they are one-year than if they are older trees.

There are numerous advantages of the one-year tree which are impossible to cover on account of lack of space but the above should be sufficient to show you the advisability of using a strong one-year tree if you are to follow the modified leader type of pruning.

I have recently had occasion to write a large number of the leading state horticulturists and well known orchardists on several subjects, one of which was the one-year tree for the modified leader type of pruning and their opinion was practically unanimous in stating that the one-year tree was far superior for training to the modified leader type of tree.

Renovating Old Trees

I have about two dozen old apple trees thirty years old. Have/ not been pruned or sprayed for several years and the tops are rather bushy. What treatment should they receive?—A. J. R., Ohio.

YOUR thirty-year-old trees, if properly handled and if not too far gone, can probably be renovated so they will bear many profitable crops. Don't make the mistake of severely dehorning all of the big branches, as this makes the tree put out a lot of water sprouts, throws it out of balance and prevents it from bearing for several years. Thin out branches where the top is thickest and head back the remaining branches moderately. By opening up the head and allowing the sunlight to get into the center of the tree, the development of fruit spurs will be encouraged and the fruit will be better colored. As soon as you have finished pruning the old trees, give them a thorough dormant spray and then follow with summer sprays.

Precooling of Fruits

(Continued from page 5)

picking when the fruit is in just the right condition of maturity, (2) removing to the cold storage promptly, and (3) cooling rapidly, it follows that the growers must be organized to handle the picking and trucking properly. It is of special importance that the fruit be moved to the precooling plant quickly when picked and packed. A delay of a few hours in getting the fruit to the cooling rooms will markedly reduce the length of time the fruit will hold up after cooling. For the transporting of the fruit to the precooling plant, a truck service should be organized. The largest growers usually can handle their own trucking, but regular trucking lines should be organized to carry the product of the smaller growers to the precooling plants.

Arrangement of Plant.

While the detailed arrangement of the precooling plant will obviously vary with many factors, there are certain important principles to consider in any plan.

First, air movement in the rooms is important to facilitate rapid cooling. If air is moving rapidly, the surfaces of the packages will be kept continuously cooled to the air temperature. Consequently, either a forced air circulation system should be used, or fans in the rooms should be provided to insure air movement.

Second, the rooms should not be too large. If very large rooms are used, it will be necessary to have warm and cold fruit in the room at the same time. The ideal arrangement consists in a number of small rooms, so that a room can be filled, then kept closed until the fruit is cold. After the cold fruit is loaded into a car, the room is ready for more hot fruit.

Third, provide ample space, so that it will not be necessary to stack the fruit closely in the rooms. Tiers of boxes for precooling should be stacked several inches apart, to allow air circulation. At least double the space should be provided that would be required to stack the quantity of fruit to be handled through the plant. It is impossible to cool fruit quickly if the boxes and crates are compactly stacked, unless the air can be forced through the packages themselves. Where a plant is to be used entirely for precooling a certain product, such as citrus fruits, where the packages are entirely uniform and difficult to cool. It is possible and oftentimes advisable to stack compactly and force the air through the packages themselves. This would be rather difficult, however, where a range of products in assorted packages is being precooled. Also it is not essential with products such as berries, cherries, etc., which cool rather rapidly.

It is highly desirable that precooling plants be operated in connection with storage unless a long season of precooling is possible. If warehouse precooling is being used, the rooms will be readily available for cold storage at any time that they are not being used for precooling work. If there is need for the storage facilities, the overhead cost of the plant is reduced accordingly.

Temperature for Precooling.

The fruit temperature should be reduced to somewhat below the temperature of an iced car. For most products, temperatures of 35 to 40° inside the packages, and in the centers of the pack, will be very satisfactory. If the produce is reduced to 40° or below, then moved promptly into a previously iced car, it should carry through to market in excellent condition. For such products as summer pears, precooling down to 30° will prove advantageous if there is doubt about their carrying through to destination. Fruit thus thoroughly cooled will warm up to car temperature very slowly, and the precooling will have the effect of storing refrigeration.

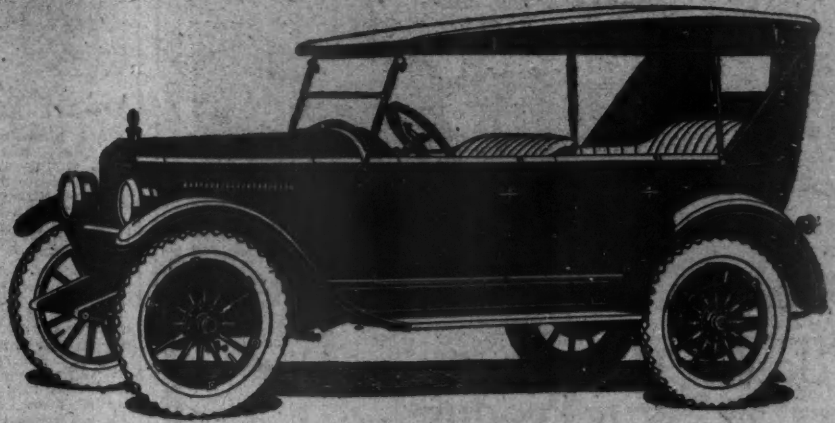
The Value of Precooling.

The value of precooling will depend

upon many factors. For highly perishable summer produce, such as berries, peaches, pears, etc., it offers the only means of quickly checking the ripening processes following picking. If the fruit remains on the tree or vine until well matured, and of full flavor, the ripening processes must be quickly checked to allow the fruit to reach distant markets in good condition. Precooling is not a cure-all. Care in picking, grading and handling are of fundamental importance, but proper precooling is a distinct aid. Proper precooling consists in moving the fruit into the cold rooms quickly after picking, in cooling promptly and thoroughly, then in rolling the fruit with the least possible delay.

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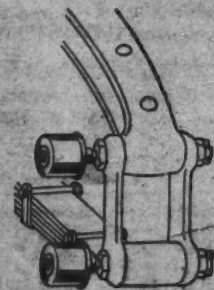
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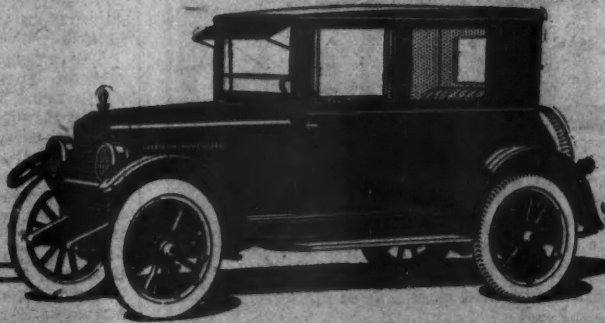


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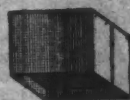
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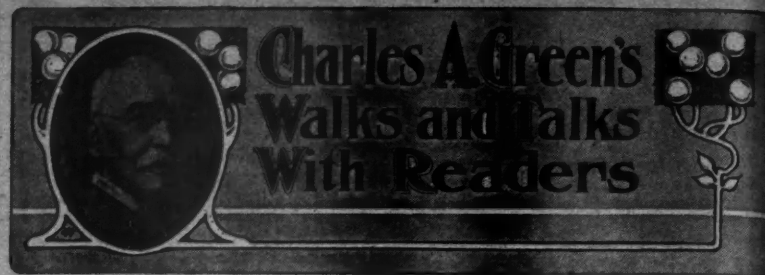
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Dwarf Fruit Tree Hedges

I AM planning to set out a hedge of dwarf pear and dwarf apple trees this spring and have been much interested in the description of the hedge you planted fifteen years ago and how much pleasure you have had from it. You say you planted the trees three feet apart. In looking over catalogs everyone says plant dwarf fruit trees ten to twelve feet apart. A nurseryman tells me if I plant closer than ten feet I will get all tree and no fruit. I will be greatly interested in hearing from you on this matter for I do not want to go to the expense and trouble of planting these trees and not get results from them. I bought trees from you some years ago and again last year and had exceptionally good results with them. The Montmorency cherry I planted last year bore five cherries last year.—F. A. Mason, N. Y., February 27, 1923.

WHILE I planted my fruit trees in my home garden for the home supply about three feet apart, I should prefer to have more space between the trees in the row. I simply suggest planting three feet apart to meet the wants of those who have but little space and for garden culture only. Surely if you have room so that you can spare ten feet between each two trees there is no objection to it. This close planting has been experimental and has worked out well in my case. Where the trees become crowded later on I remove an occasional tree. My plan is to dwarf the trees by this close planting.

Some times these fruit hedges are planted by me to test new fruits or little known fruits. In that case after the trees have borne several crops, as they will, and fine crops of fine fruit, it may be necessary to take out occasionally a tree or every other tree. I have such a row of trees near my office planted to test the correctness of the label. These trees have borne five crops without becoming seriously crowded. The fruit has been of large size since the ground has been well cultivated. There is plenty of room on both sides of the row. It would not do to plant the trees closer in the row and between the rows also as in that case you would not get sufficient sunshine, but when you get sunshine from two sides of a row thrifty growth will be made.

The original fruit tree hedge in my kitchen garden was planted thirty years ago. This row has borne bountifully throughout the years, but at the present time it looks rather ragged, owing to the fact that occasionally trees have been taken out, and in other cases standard fruit trees have been introduced, which do not work well with dwarf pear trees planted closely together. Thus I have in this dwarf pear row a Duchess dwarf pear, a Clapp's Favorite dwarf pear, and among other things a Bosc pear. These three trees have been heavily loaded, but after twenty years' growth they have to be given more room in the row, but not between the rows. These three pear trees actually have supplied yearly more pears than my family could eat. I have given them away to my neighbors.

Plant Another Tree

I HAVE only a small plot of land but for several years I have planted one tree each year on our wedding anniversary. Do you think it pays?—Jane L.

I ADVISE this and I practice what I preach. I have planted what amounts to more than one tree every year for over forty years. Some years I have planted thousands of trees.

We cannot have too many trees in this country. If the coal mines give out, it is pleasant to look out of your window upon a few acres of forest. I planted a row of Lombardy poplars ten feet apart the whole length of Green's Fruit Farm. This makes near-

ly a mile stretch of trees now as large around as my body and twenty or thirty feet in height. The trees can be seen from a long distance. In one sense they are an advertisement.

They say that there are 110,000,000 birthdays in the United States every year. What a boom would occur in tree planting if every birthday were celebrated by the planting of a tree.

No, neither you nor I appreciate fully the value of a tree. First its beauty, second its usefulness in so many ways, third its modification of the temperature, fourth the fruit it will bear, fifth the additional interest which one must take in his forestry planting with his own hands.

It is the trees that prevent the earth turning into a desert. I am told that the great deserts were once filled with trees and were full of moisture with ability to produce whatsoever might be planted.

After you have planted a tree do not be satisfied that you have done all you should do for yourself and for the community. Plant many trees and do it now.

Advancing Prices for Pecans

FOUR or five years ago when my friend, Van Deman, was planting his pecan orchard down in Louisiana, he and other nut growers were anticipating getting as high as fifty cents a pound for large paper-shell pecans. I thought at the time that the nut growers were too sanguine as to large prices, but a few days ago I paid twenty dollars for twenty pounds of the best pecans.

Last year I bought small paper-shell pecans for twenty cents a pound and larger ones for thirty-five cents a pound, but these prices were exceptional. One reason why pecans are so much higher priced this year is that there is a very small crop. Some orchards are not bearing at all. The principal supply of pecans this year comes from Georgia.

This question is asked: "Is one kind of nuts more nourishing than another? Are the English walnuts as rich in plant food as the pecans or the Brazil nut?" The Brazil nut is very oily and rich and I would say it is ahead of the English walnut in nutrition and probably ahead of the pecan. It is certainly more oily than any other nut I know of. Now where does the lowly hickory nut come in as a competitor? Some hickory nuts are as rich and meaty as pecans, while others are very hard and thick-shelled and hardly worth considering as food. What a pity that some of those hickory nut trees that bore such fat and oily nuts in the days of my childhood were not preserved instead of being chopped down so thoughtlessly.

Co-operative Association

WE OF THE eastern states are trying to co-operate something after the manner of co-operation among the orange growers of Florida and the apple growers of the Pacific coast and allied districts. The east is succeeding fairly well in co-operation, but one thing must be clearly understood and that is that the grower shall have nothing to do and nothing to say about the packing of his fruit or the sorting. The sorting must be left with skilled men, also the packing and boxing. Then under such management one box of fruit will be practically the same as another in size and appearance. But so long as the grower packs his own fruit and sorts his own fruit no uniform grade will ever be secured and organizations will be a failure.

Raisins For Export

(Continued from page 7)

same as practiced in the American business world must be thrown aside when the foreign field is entered and the foreign merchant is approached for business. Nothing could be farther from the truth. The business man who has successfully grasped the principles of doing business at home will master the technique of export, as if his fundamental attitude toward business is correct. The merchant abroad buys goods to sell at a profit just as does the American merchant who is pursuing the same purpose. His moral and legal obligations are the same. The principle that governs a sale in the United States is the same that governs a sale the world over. In all instances it is governed by the immutable laws of quality, utility and price.

The organized raisin producers of California entered the foreign field with these fundamentals in view, feeling as perhaps they should that the greatest of these is quality.

Value of a Brand.

Dealers and consumers in the United States had been taught to insist upon the brand of the organization because of its superior quality, and the raisin growers felt that the rest of the world could be made to realize the same trade value in that brand if they maintained an unwavering adherence to the high standard of quality which has always characterized the products sold under that brand. Good business judgment, however, indicated that a careful survey of market conditions must be made in each country before offering the product for sale.

To approach a certain market the growers first studied the conditions of that market and planned to adapt their product and marketing methods to conform with the customs of the country and the habits of the people. Great Britain was the first country in which trade connections were established. The organization plan of the raisin growers was materially the same as the sales organization plan successfully used in the United States and Canada. A trained raisin sales manager was sent to London to establish the English office. District offices were established in the larger trade centers throughout Great Britain and a force of English specialty salesmen, through the help of the main office organization in California, were rapidly trained in raisin lore and salesmanship. Advertising was immediately started throughout the entire British Isles and with the consistent sales activities of the highly organized and specialized sales force, coupled with an advertising campaign which savored of aggressive American methods somewhat unusual in England, resulted in almost immediate response on the part of the trade. The specialty salesmen called on and sold to the jobbers. Later direct calls were made on the retailers accepting orders from them to be filled through the jobber or wholesaler designated by the retailer. The same methods of dealer help, co-operative advertising, window displays as are used so successfully by the raisin growers in the United States, was brought into play in the English campaign. The results of this effort are reflected in the almost immediate response of the British trade as indicated by the increased tonnage of raisins exported.

Oriental Market.

Almost simultaneous with the opening of the English market, another trained sales representative was dispatched by the raisin growers to the Orient and sales offices were established at Shanghai with a branch office at Yokohama, Japan, and brokerage connections in the Philippines. This vast territory with its teeming millions of population is a potential market for thousands of tons of raisins. It is a new market. The Orient is not familiar, to any extent, with raisins as a food. The problem confronting the raisin growers in the Orient is a unique one. They must

educate more the prosperous classes in China and Japan to know and to like raisins. This must be accomplished through intensive educational and advertising campaigns coupled with centralized sales work and a close study of the habits and customs of the Orient. Trade expansion will be much slower than in Great Britain. The initial step has been taken and good results assured.

Continental Developments.

After the sales organization in Great Britain was well under way the time appeared to be ripe for trade extension throughout Continental Europe and another office was established in Amsterdam with a branch office under its control at Copenhagen. The Continental European campaign is mapped out on a different plan. Here the usual brokerage connections will be maintained for the present. The raisin growers were not content with opening up markets in the old world but next turned their attention to potential markets on the Western Hemisphere. Mexico was invaded and suitable trade connections were established in that Republic and at the present time an office is maintained at Mexico City. The manager of the Latin-American department then made his way southward and is now in South America studying trade conditions. His report will largely determine whether or not California raisins are to be exploited among our Latin-American neighbors to the South.

This is the story. It is the reason behind the astonishing figures compiled by the Department of Commerce on increased exports of American raisins. It is probable that the next few months will show a correspondingly large increase in export business. This, the pioneer effort on the part of American fruit growers, points to the solution of the export problem for our surplus fruits.

The foundation for development of foreign markets is plainly co-operative organization. It is only through this means that the individual producer can hope to exploit foreign markets and develop a satisfactory trade for his products. No one will do the job for him. He must carry the load himself if lasting success is to be achieved. A cleanly packed high quality standard product properly and intelligently advertised and merchandised is the first essential to that success.

Shot Hole Borer

THERE are two species of shot hole borer working in the United States, one in the east and the other on the Pacific Coast. They both, however, are very much alike. They make holes in the branches of trees and have the appearance of shot holes. In peaches and prunes they will often cause a gumming where these holes are made. The holes are the entrance to burrows which the insect makes in the branches of trees.

Shot hole borers practically never attack healthy trees. They attack a tree which is weak, devitalized or diseased in some way and their presence is always an indication that something is wrong with the general health of the tree. Cutting off the branches which are badly infested and burning them is one of the ways to keep the pest down. The cutting back of numerous old branches will sometimes bring on a new top which is vigorous and will not be subject to the attack of the borer.

Wherever this type of borer is abundant the grower should study the vitality of his trees very carefully and see if he cannot inject more vigor into them. Better cultivation, better drainage, more moisture and more fertilizer is the remedy to follow. On the Pacific Coast they sometimes paint infested trees—those portions which are infested with the borer—with the following solution:

Water, 3 gallons; soft soap or liquid fish oil soap, 1 gallon; crude carbolic acid, ½ pint. Put this only where the insects are working and re-wash in intervals of a week, three times.

Wanted in California 50,000 able bodied farmers

California needs farmers—stock breeders, poultry raisers, dairy-men, fruit growers—farmers of every description.

There are thousands of acres of fertile land awaiting cultivation. There are multiplying markets with ever increasing demands to be supplied.

If you are able-bodied, a willing worker and have a reasonable amount of capital (three thousand dollars or more), the investment of your energy and money in a California farm will be returned to you many fold

This assurance of prosperity is well founded because:

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4. California has an ideal growing climate—often two or more crops per year.
5. Good crops in California are made more certain through the control of moisture by irrigation.
6. California farmers make national markets for their produce and get higher prices through their co-operative organizations.

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If the urge is in you to farm in California, take it for granted that there is a place for you here. But first you must have the facts. You can get them from Californians Inc., a non-profit organization of California citizens and institutions interested in the sound development of the state. We will be glad to supply you without charge authoritative information regarding your opportunities in California.

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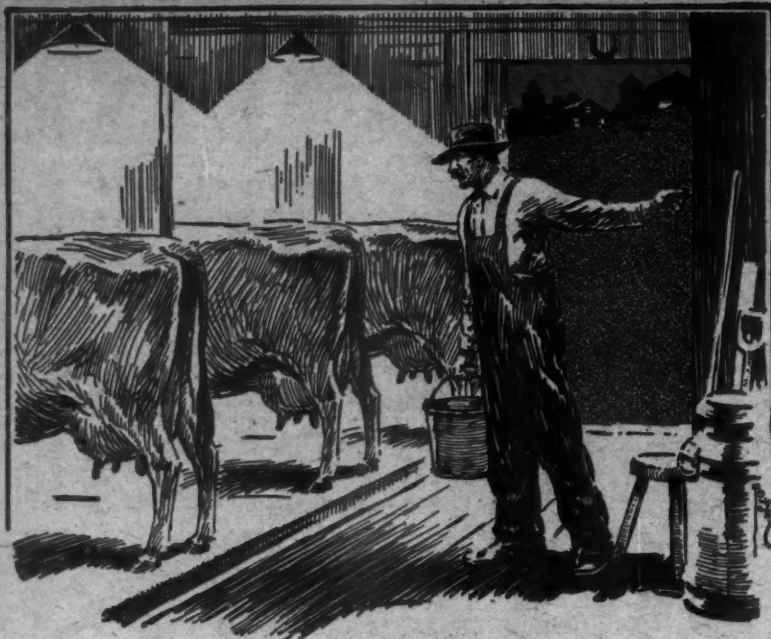
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Growth depends upon the financial stability and physical efficiency of the local electric light and power company.

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So great is this self-interest, and so rapidly is it becoming generally realized, that already more than 1,750,000 people have invested in electric light and power company securities. Wherever there are large numbers of these "customer owners" the ideal form of "public ownership" exists.

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You can average higher prices for your fruits by selling them at public sale than in any other way. And the selling cost will be lower. In addition, you get your money within twenty-four hours after sale. Write for free copy of booklet entitled "More Dollars for Fruit Growers."

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WITH THE CO-OPS.

OVER in St. Joseph, Mich., there is a very live association known as the St. Joseph-Michigan Fruit Association. This organization in the past year did a business of \$765,841.31. It handled during 1922 11,608,372 lbs. of bulk grapes, which averaged \$65.30 a ton. It handled 784,025 four-qt. baskets of grapes at an average price of 21c. Bulk Kieffer pears were handled to the extent of 2,786,761 lbs., at an average of 63c per hundred lbs., and 39,334 bu. of Kieffer pears were handled, the average price received being 56c.

As is generally known, the grape crop in the east, as well as in California this past year, was very large. The prices did not rule quite as good as in previous years when the crops were lighter or war time prices ruled. The following table, which gives a comparison of pooling prices on Concord grapes in Jumbo baskets per ton from 1914 to 1922 is interesting:

1914.....	\$23.60
1915.....	26.54
1916.....	35.00
1917.....	45.02
1918.....	75.80
1919.....	77.77
1920.....	103.37
1921.....	92.86
1922.....	65.30

The second table shows a comparison of the pooling prices on Concord grapes in 4-qt. baskets from 1914 to 1922:

1914.....	\$0.09.7
1915.....	13.7
1916.....	16.5
1917.....	17.3
1918.....	29.1
1919.....	25.2
1920.....	30.8
1921.....	31.5
1922.....	21.6

The directors of this association are as follows: John Kowalski, Fred Arenz, Fred Geisler, Alfred Moor, Carl Whetstone, Carl Stelmis, Arthur Marrs, Ira R. Stemm, F. L. Bradford, Frank P. Cupp and H. P. Rentfrow.

ILLINOIS is coming to the front in co-operative work. The second annual meeting of the Illinois Fruit Exchange was recently held at Centralia, 645 of the 821 members of the Exchange being present. The following units with their managers were represented: Alma Unit, L. C. Downey, Alma; Anna Unit, Willis Hartline, Anna; Belleville Unit, Jos. Stoeckel, Belleville; Carter Unit, Murray McLaughlin, Carter; Centralia Unit, Julius Nolting, Centralia; Creal Springs Unit, W. P. Schuey, Creal Springs; Dongola Unit, C. E. Keist, Anna; Flora Unit, Herbert Harrison, Flora; Kell Unit, O. V. Cummins, Dix; Makanda Unit, E. D. McGuire, Makanda; Mascoutah Unit, L. B. Eidman, Mascoutah; Quincy Unit, Willy Seward, Fowler; Texico Unit, J. W. H. Connaway, Ozark Unit, Guy Schuey, New Burnside and Villa Ridge Unit, R. B. Endicott, Villa Ridge.

Secretary Casper's report showed that the association now has 20 units of 821 members. The units which belong to this association are as follows: Alma, Alto Pass, Anna, Belleville, Carter, Centralia, Cobden, Creal Springs, Dongola, Etherton, Flora, Freeburg, Kell, Makanda, Mascoutah, Metropolis, Quincy, Ozark, Texico and Villa Ridge. Of the 20 units represented, 10 now either have central packing houses or central grading equipment, these houses ranging in cost from \$1,000 to \$10,000 each. The Ozark packing house, which cost \$10,000, is the largest in the state. It is 56 by 80 feet, besides loading and unloading platforms. The building has two stories and a basement and in-

cludes grading, lighting and electric generating machinery. It is the general opinion of the association that the greatest chance for development in preparing fruit for market lies in the central packing house.

This past year the association handled 1,052 cars, divided as follows: apples, 501; peaches, 432; pears, 50; mixed fruits, 3, and strawberries, 64. In addition to the sales the association purchased approximately 50 cars of materials for its members. Manager Leeper's recommendations for the future were as follows: A closer relationship between the Illinois Agricultural Association and the Exchange; a very careful selection of marketing agents for the coming year; the building and equipment of more central packing houses; the planting of fewer varieties; a more comprehensive bookkeeping system and more co-operation with the Farm Bureaus.

The following men were elected as members of the Board of Directors for the ensuing year: W. L. Cope, Salem; N. W. Casper, New Burnside; R. K. Loomis, Makanda; O. V. Cummins, Dix; R. B. Endicott, Villa Ridge; Frank J. Lanter, Belleville; and E. H. Barker, Cobden. The following officers were elected by the Board: W. L. Cope, President; O. V. Cummins, Vice-President; Norman W. Casper, Secretary, and Ernest G. McKinsey of Centralia, Treasurer.

PRUNE growers of southern Idaho are planning to organize a Southern Idaho Prune Growers' Association. The initial steps were taken by the Boise Chamber of Commerce. Prune growers representing over 1,200 cars of prunes met and elected temporary officers. The organization will include growers from every part of southern Idaho and it is hoped that the growers may be able to market their crops more efficiently and at a greater profit than has heretofore been received. The temporary officers elected are as follows: J. R. Field of Emmett, chairman; A. A. Steele of Parma, secretary; committee members: W. S. McBurney of Boise; Lab Boone and Park Gavin, both of Boise; A. J. Shearer of Payette; J. J. Allison of Caldwell; Miles Cannon, commissioner of agriculture; Charles Cairns of Meridian; Don Whitig of Boise; Oscar Kallman of Wilder, and M. M. Hurst of Fruitland.

AT a recent meeting of the Wenatchee-Okanogan Federation, J. A. Warman was re-elected as manager, F. V. Taylor as president and C. W. White as secretary. Trustees elected included F. V. Taylor, Sunnyslope; F. H. Moses, Cashmere; C. W. White, Peshastin; I. H. Logue, Pateros; F. H. Phipps, Brewster; P. M. Martin, Entiat; G. M. Wild, Chelan, and F. C. Paine, Omak.

The organization felt that under the circumstances prevailing in the country good results were secured this year and voted to affiliate with the Federated Fruit & Vegetable Growers. The organization went on record as favoring uniform grade, pack and inspection for the entire district. It pledged its support to the "Eat Wenatchee Apples" campaign provided the entire Wenatchee district will adopt uniform grading rules.

NEW JERSEY growers are finding that the Connett peach ripens at about the same time as the Carmen but that it is brighter in color and is a better seller on the New York market than the Carmen.

Why Trees Don't Bear

(Continued from page 8)

our leading commercial fruits are imperfect, the pollen is often defective, there is an incompatibility between the pollen and the ovules. Seemingly nature has done everything it can to force a crossing of our varieties. When the writer had charge of the work in horticulture at the Oregon Agricultural College, we found that out of eighty-seven varieties of apples which were tested fifty-seven were self-sterile.

As a rule, an apple grower does not have to worry very much about pollination provided he will grow three or four commercial varieties that overlap in their blooming and will plant these in belts, say two to six rows of a variety and then bring on a second variety and then a third. If he so plants his orchard that no trees are more than three or four rows away from a good pollinizer, he will have little trouble. There are one or two interesting exceptions. For example, a Winesap does not seem to produce pollen. I have collected Winesap blossoms from various parts of the United States and was never able to secure much pollen from them. Let us take a combination like the Winesap, which does not produce pollen, and the Spitzenburg, which is self-sterile and is a rather poor pollen producer. The result might be a fair crop of Winesap but practically no Spitzenburg. A variety of apple, or of other fruit for that matter, may be fertile under certain conditions, but sterile under others. Varieties of apples which tend to be more or less self-sterile are: Gravenstein, Arkansas Black, Maiden Blush, King, Arkansas, Rome, Rhode Island Greening, Salome, Carman, Winesap, Wealthy, York Imperial and Spitzenburg. There are other varieties which are classed as self-fertile but which in some sections are sterile. This is true of the Duchess, which in some sections of the northern states is decidedly sterile.

Pears have to be watched much more closely than apples. Varieties which tend under normal conditions to be sterile are: Bartlett, Anjou, Clairgo, Clapp Favorite, Kieffer, Howell, Columbia and Winter Nellie. Bartletts can generally be pollinated by such varieties as Anjou, Duchess or Kieffer. In California the Bartlett is self-fruitful in some sections. In the Antelope district, for example, the fruit is often produced seedless. In many sections, however, it is found well to cross the Bartlett. In experiments tried in California by the Experiment Station the Bartlett was found to be pollinated nicely by the Anjou, Angoulême, Clairgo, Comice, Dana Hovey, Howell, Kieffer and Winter Nellie.

Peaches as a class are self-fertile. Of late, however, a number of experiment stations are concluding that one reason the J. H. Hale has so many small peaches and produces crops of buttons and small peaches and generally has a wide range of size of specimens is that this variety is largely self-sterile.

The cherries form one of our most interesting chapters of fruit. Our three leading varieties known as the Royal Ann, Lambert and Bing are not only self-sterile but are inter-sterile. In the commercial districts of the Pacific Coast the long-stemmed Waterhouse is a variety used to pollinate the Royal Ann. Where shipping cherries are desired, the Black Republican and Tartarian are used, especially with the Bing and Lambert. There are many other varieties which will pollenate these standard commercial sorts but these varieties are not commonly grown. In some sections it is believed that the Burbank will be a good pollinizer with some of these varieties. The better cherry growers of Oregon told me that were they planting orchards again they would make at least one-fourth of their trees pollinizers. It is believed from some experiments which have been conducted by the Oregon Experiment Station that perhaps every third tree in every

(Concluded on page 21)

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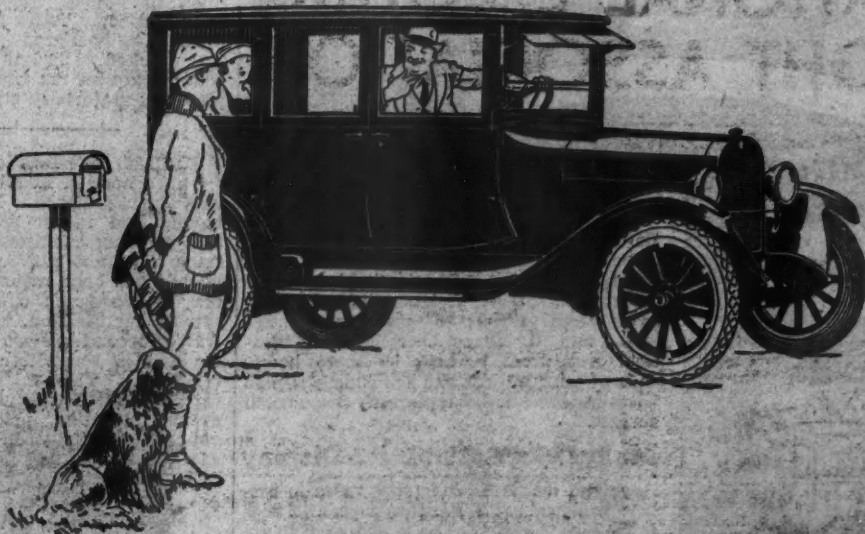
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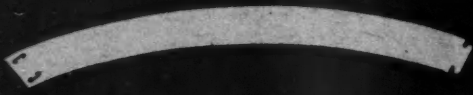
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MARKETS AND MARKETING

APPLE growers have benefited by the changes in the market which have taken place since February. There has been a general strengthening of prices despite rather large offerings. In New York Baldwins in barrels have ranged from \$3 to \$5.50 and Greenings from \$3.50 to \$6. Greenings in all markets have been showing some scald, which is characteristic of that variety at this late season. Ben Davis have been ranging from \$2.50 to \$5; Albemarle Pippins, \$4 to \$4.50; Northern Spies, \$5 to \$12; and Snow apples from \$5 to \$10. Spitzenburgs, Winesaps and Yorks have been ranging from \$4.50 to \$5.50 per barrel, with a few sales of the latter variety as high as \$6. Delicious in boxes have ranged from \$1.50 to \$4; Rome Beauties, \$1.50 to \$3, and Spitzenburgs and Winesaps, \$1.50 to \$3.25. McIntosh, which have sold well in the market for the entire season, reached the unusual figure of \$18 per barrel. These prices have been due partly to heavy snows which have delayed shipping of this variety to market.

Chicago handled a very large tonnage of apples through February and early March. February 1st showed 236,754 barrels, while March 1st there were only 176,521 barrels. The storage of boxes showed on February 1st, 792,924 boxes and on March 1st, 618,412 boxes. During March, up to the time that we went to press, liberal amounts of fruit were being offered the Chicago market, 1,260 cars of boxed apples having been shipped from western states for the week ending March 5th. Barreled apples in the Chicago market have held steadily, Baldwins, Greenings and Kings ranging from \$5 to \$5.50 a barrel for "A" grade stock; Wagners, \$4; Spies, \$5.50 to \$6; Golden Russets, \$5.50, and Starks, \$4.50 to \$5. No. 1 Illinois barreled Jonathans brought \$5.75 to \$6. A few very fine Michigan barreled Jonathans were reported to have sold as high as \$9.

Cincinnati and other Ohio Valley markets reported a very good movement of apples. Baldwins brought \$5.50 and some better grades a higher price. The best grades of Rome Beauties reached \$6.50 and Ben Davis \$5. The market on the western boxed apples was materially stronger.

LIBERAL offerings of citrus fruits have arrived in all northern markets during March. Florida reports having had rather dry weather for best growing conditions although the trees have not suffered. Some fruit offered has been rather dry, probably due to too much cultivation or improper fertilization. Canned grapefruit is becoming more and more popular and is receiving very wide distribution. The middle of March showed a distinct improvement in the orange situation, prices having advanced, especially on sizes 176 and smaller, the trade paying from \$5 to \$6.75 delivered for these sizes. Florida grapefruit prices have been higher in many markets and firm in others. It is expected that prices will advance, especially on sizes 54 and smaller. Kings and tangerines have been bringing very high prices where stock is not puffy and dry. The finest kings have brought as high as \$11.30 per box delivered and are being retailed in some of the northern cities for 15 and 20 cents a piece. Florida oranges have had a wide distribution this season in middle western markets as well as in Canadian and eastern markets. Southern markets have been ab-

sorbing a large quantity of low grade fruit. Statements as furnished by the Florida Citrus Exchange show that 17,777 cars of oranges and 10,562 cars of grapefruit, making a total of 28,339 cars, have been shipped to date, the total shipments last year figuring 23,878 cars. This shows an increase already of 4,451 cars. The cars averaged 360 boxes per car, at an average price of \$2.50 f. o. b. packing house, which means that \$25,470,000 of new money has already been brought into Florida this season.

Estimates from California for the crop from November 1st, 1922, to October 31st, 1923, are that the crop will be approximately 60,112 carloads, the increase in the crop being largely due to a heavy orange crop, divided about equally between Navels and Valencias. It is expected that oranges and grapefruit will represent 48,753 cars and the balance will be lemons. The middle of March showed California Navel oranges selling at somewhat lower prices than the previous week's, especially on sizes 126 and larger. The supply of Navels on many markets has been large. It is estimated that from 10 to 11 thousand cars of Navels are left to be shipped during the months of March and April. California prices f. o. b. in the middle of March were ranging from \$1.85 to \$3.40 according to size. Owing to flu attacks in many eastern cities the lemon market has been very active and prices have been ranging f. o. b. California from \$4.75 to \$5.25 per box.

The New York market shows a decline of from 10 to 25 cents a box on all sizes of Navels except those of 100 and larger. Receipts of California tangerines have been light and the market has not changed materially. California lemons have been arriving in good condition and have been selling well. There have been, however, some very heavy imports of European lemons which have caused a general reduction in price. Three hundreds were selling from \$7 to \$7.50, choice from \$6.10 to \$6.85, and best 360s brought \$6.75 to \$7.10. A considerable proportion of the Florida oranges arrived in the market rather mature and offerings were heavy. At the time we go to press Indian Rivers were ranging from \$4 to \$6.75 a box. Florida tangerines were selling well, ranging from \$7 to \$8.50 a box and in a few cases passing the latter figure.

THE prune market has been picking up steadily since the latter part of February and all over the country showed a much firmer condition than prevailed through January and February. In one week alone in New York in the latter part of February more prunes were sold than had been true for the previous two months.

The California Prune & Apricot Growers' Association has found through the courts that it can collect on the 1920 over-payments and suits tried in Chicago also indicate that buyers who welched on their contracts in 1920 will have to pay the same.

A national prune week is to be held from March 19th to 24th and over 5,000 grocery stores will put on special window displays of Sunsweet prunes and special efforts will be made to sell this fruit. A year ago 10,000,000 pounds of prunes were sold by retail grocers during prune week.

The dried apricot market has been decidedly slow. Prices are too high to warrant heavy consumption. Buyers instead of purchasing carload lots are buying in lots of only 10 and 15 boxes.

Why Trees Don't Bear

(Continued from page 19)

third row, which would mean one-ninth of the trees, should be pollinizers, and this would be the minimum. However, the writer feels that were he planting an orchard himself he would make at least twenty-five per cent of the trees pollinizers, judging by observations he has made in Oregon in commercial orchards and by some experiences he himself has had in commercial cherry growing.

Japanese Plums Sterile.

Japanese plums are notorious in being self-sterile. You must have various varieties with them if success is to be experienced. Some of the hybrids like the Climax are fertile but such varieties as the Satsuma, Kelsey and Combination are not only sterile but are poor pollen producers. Most of the native American plums are also self-sterile. That is especially true of the Wild Goose, the most common one grown. However, most of the Japanese and American species will inter-cross and most of the European varieties of plums will also fertilize the Japanese. The European species tend to be self-fertile. With plums we find that nearly all of them are self-fertile but there are some evidences that the Italian at times is improved by crossing. The French prune seems to be self-fertile but the Imperial prune on the Pacific Coast needs to be pollinized with some other variety. This variety when grown in the east in mixed plum orchards is a very heavy bearer but on the Pacific Coast it is generally shy in bearing.

Of the grapes the Brighton, the Barry and the Salem are almost invariably self-sterile, while such varieties as the Lindsley, Wyoming and Vergennes are occasionally sterile.

Work done by the California Experiment Station shows that practically all varieties of almonds produced in that state are self-sterile and even such well-known varieties as the I-X-L and the Nonpareil proved inter-sterile during three seasons' work. Also the Lanquedoc and the Texas proved practically inter-sterile. We know that filberts tend to be decidedly sterile, that practically all varieties so far seem to have that characteristic and that the Barcelona and Du Chilly can be inter-planted. The Du Chilly will pollinate the Barcelona but the Barcelona will not pollinate the Du Chilly. The latter variety must have scattered among it some varieties like Daviana, Turkish or Clackamas. There are evidences that some of our walnuts would be greatly improved by inter-pollination, that it would extend the period during which the walnuts might be pollinized. Some varieties have a longer blooming period than others.

So, we can see in general that the wise thing for a grower to do is to diversify his varieties in planting and choose those varieties which bloom about the same time. There are a few things which we should continually keep in mind. In choosing pollinizers, be sure you have those varieties which will inter-cross, be sure you have varieties which bloom during the same period, choose if possible varieties which seemingly are good pollen producers and choose good standard varieties for pollinate purposes. For example, with cherries. The wild seedling cherries are perhaps the best pollinizers but they have practically no commercial value, whereas there are pollinizers which can be chosen which have a high commercial value. Choose varieties which are hardy, productive, good strong bloomers and which furnish plenty of pollen. There are some exceptions, of course. In the case of the Winesap, for example, where one cannot classify this variety under the recommendations which we have made, but this is an exception rather than a rule. Make at least a fourth of the varieties pollinizers; plant your orchard in rows, such as two, four or six rows of a variety and then bring in some other variety; keep your orchard in as near a normal condition as possible and avoid excessive

growth on the one hand or no growth on the other; choose land which has good soil and air drainage. If these suggestions are followed, rare indeed should be the tree that does not produce a normal crop of fruit.

Crop Report

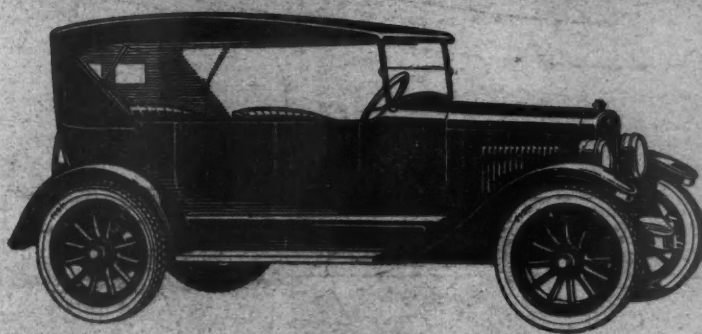
SOME of our readers become anxious at this time of year to know what the crop of 1923 is going to be. It is far too early to predict. We can only report on what the winter weather has been up to date and how seemingly the fruit trees have fared. Up to the time that we go to press, southern California and Florida have had no serious freezes, which would have greatly reduced their crop of citrus, in fact, they have passed through a good winter. The North Atlantic states have been buried in the heaviest fall of snow experienced in many years. Winter temperatures, however, have not ruled exceedingly low and the heavy snowfalls of New York and the New England states may prove in a long run beneficial to agriculture rather than otherwise. No reports have come from Delaware, Maryland or the Virginias up to the time we go to press, which would lead one to believe that their fruit has been seriously damaged this past winter. In the middle west, an unusually mild winter has been experienced with the exception of the month of February, when there were certain periods when the temperature went down to zero or lower. On the whole, however, these temperatures were not sufficient to injure trees or buds. A few peaches here and there may have been injured somewhat but the great fruit crop as a whole has not been injured by winter temperatures. The Pacific Northwest had several cold snaps but not sufficiently cold to injure trees or buds other than possibly a few stone fruits in low places. Northern California as a whole had a very good winter. There has been an unusually large amount of rain at times and rather high temperatures but no serious freezes. The period from the middle of March to the middle of May, however, is a crucial one and will determine to a very large extent what our fruit crop will be. We cannot tell much before the first of June what the commercial crop will be for our deciduous fruit. As soon as we can get a good line on the situation, however, we will post our readers.

Spraying Young Trees

Is it advisable to spray young apple trees that have been in the orchard three years or less? If so, how often?—C. E. S., New Jersey.

ON the younger trees, spraying is not so necessary because most of the insects and diseases for which we spray, trouble the fruit more than they do the foliage. However, spraying does not do any harm and very often means stronger growth and prevents damage to the foliage or trees by different diseases and insects. It is generally advisable to give a good dormant spray. In addition to this, it is a good plan to give two or three sprays during the season. In spraying a small orchard, you can use an ordinary barrel sprayer but on a large commercial orchard, particularly where the orchards are planted with fillers and the rows are planted as close as 18 ft. apart, some overhead arrangement can be made whereby four rows can be sprayed at once with a power sprayer.

In my own orchard the trees are twenty feet apart. I have sprayed my trees by an arrangement as described above. It is simply overhead pipes with arms that extend out over the adjoining rows and have a hose attached to each end of the extension. Two men follow the sprayer and spray the adjoining rows and two other men are on the two outside rows so that every time the sprayer goes across the field, it sprays four rows of trees. If you have a good power sprayer, it will handle the four nozzles and it will be surprising how many acres you can cover in a day.—Paul Stark.



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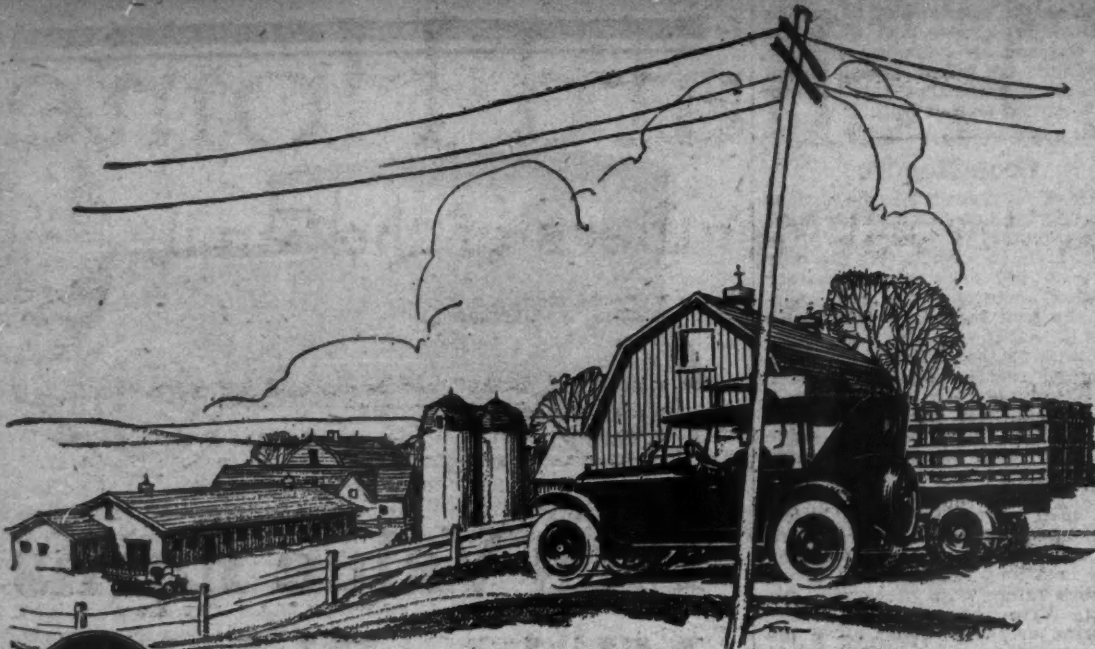
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The Pears of New York

"THE Pears of New York" is the last of a series of six monographs published by the New York State Experiment Station, Geneva, N. Y. The first of these monographs is entitled, "The Apples of New York," and was written by the late S. A. Beach. The succeeding volumes, being the Grapes, Plums, Cherries and Peaches of New York, have been written by U. P. Hedrick, now Horticulturist of the New York State Experiment Station, Geneva, N. Y. Seemingly each one of these monographs is an improvement on the previous one. The latest, "The Pears of New York," is said by many to be the finest as regards typography, and especially the color work. Eighty beautiful colored plates of the leading varieties of pears grown in this country are used in the work and they are seemingly as true to life as it is possible to make a picture.

This work treats of the development of the pear wherever cultivated up to the present time. Chapter 1 is devoted entirely to the history, discussing first the wild pears as they grew in their native homes in southern Europe or parts of Asia. The pears of ancient Greece and Rome are given considerable space, and also the pears of France, Belgium, central and eastern Europe. Chapter 2 is devoted to a description of the species of pears and their characters and structural botany. The characters of pear trees, fruit characters and the various species of pears are described in detail. Chapter 3 is devoted to pear culture. It deals with statistics of pear growing in various states and discusses in detail such factors which influence pear culture, such as climate, location, soil, etc. Pear orchards and their care and treatment of diseases and insects come in for discussion in that chapter.

A large number of varieties of pears are described as the book takes up 636 pages. The varieties are divided into two classes, those which are more commonly grown and those which are not usually produced commercially. In selecting the varieties the author states that the following points were kept in mind: First, the value of a variety for home or commercial orchards; second, noteworthy new varieties; third, varieties desired in breeding new pears; fourth, a few sorts are described and illustrated to show the trend of evolution in the pear. The back of the book contains a very valuable bibliography and reference table.

This work cannot be secured by writing the New York State Experiment Station as only a few volumes are issued to be sent out generally. Volumes can be secured if one has a friend in the Legislative Assembly in Albany, N. Y. A little later, undoubtedly, volumes of "The Pears of New York" can be purchased through the state printer of New York, in the same way that the other volumes heretofore issued have been available.

We hope to tell our readers more in the months to come concerning the very valuable information in "The Pears of New York."

Black Knot

BLACK knot is a disease which attacks the European plums and sweet cherries, especially in the east. The disease is practically not found on the Pacific Coast. The disease is produced by spores, which are carried by the wind from tree to tree. These spores grow for an entire season within the branch. The following spring the branch will begin to swell and enlarge, producing first a swelling which is irregular and brown in color which later becomes hard and very dark and takes on a rough appearance.

The most practical remedy for this disease is to carefully cut it out. Cuts must be made well below the point where the swelling appears. It is very important that this cutting be done early in the spring, before the fruiting spores are set free to cause new infestations to occur.

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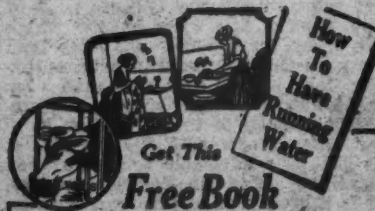
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The Orchard Home

A Section for All Members of the Family

Edited By MARY LEE ADAMS

Emil Coue As I Saw Him

THE arrival of the little French druggist in America was heralded by more columns in the newspapers than many an event of wide international importance. Since M. Coue had no large fortune with which to finance these press notices, since he is outstandingly modest in the claims he makes, since an abundance of so-called healers are, like the poor, always with us, some of us orchard women have wondered in what lies his distinction from others whose practice is somewhat similar to his.

To settle this in my mind I went to see and hear him, and came away with a better understanding of the remarkable influence of this apostle of the power of the sub-conscious mind through auto-suggestion.

The first impression proves that Coue's personality inspires confidence in an extraordinary degree. It is probably his kindliness that so immediately attracts people to him. Kindliness twinkles in his eyes, sounds in his voice. Absolute belief that he can do for you what he claims to do, is so evident that not even his critics doubt his sincerity.

And what he claims is not that he can cure anyone of anything, but that he can show everyone how to help themselves. No miracles for him, just an instructed use of natural forces which the majority ignore.

Though a poor boy, Coue has yet studied and won scientific degrees which are conferred only upon the trained mind. If nothing else is brought away from one of his meetings we take the conviction with us that here is a great-hearted human being, imbued with an all-embracing love for mankind. Some will be unable to accept his theories. Others who arrive at faith may be, and many have been, greatly benefited. No one can by any possibility be harmed. It is inspiring to know the power for good wielded by this simple and formerly obscure man.

Work and Play

WORK while you work; play while you play. That's the old recipe for being healthy, happy and gay. But mingling work and play is something of a novelty and does not meet with general approbation. Yet we are always looking for something that will lighten the dull monotony of tasks, and particularly of the task of study which the average child finds so much less interesting than playing ball or than playing truant.

Teachers admit that they have not found the necessary element to combine with studies, which shall make the child enjoy them at their true worth. If the matter taught is intrinsically interesting, why, it is asked, cannot some method of teaching it be devised that will not bore the average child?

Ainsworth Rucker, teacher of algebra at Shaw High School, Washington, D. C., claims to have substituted enthusiasm for indifference, by teaching this tough subject in the terms of baseball. "Pupils are assigned to their positions and all field men and base men are also assigned to a class of factors." The person who reads the problem is supposed to be the pitcher who throws the ball. It is the province of the batter and catcher to see who

first can assign it to its proper class. If the batter succeeds first, it is counted as a hit and the ball goes out in the field, etc., etc.

It is claimed that the liveliest rivalry prevails. Just such a plan demands a previous course in baseball, but if there is anything in the principle of interesting pupils by teaching in terms of play, we commend it to puzzled teachers.

Women Like To Earn Money

THE Census Bureau is authority for the statement that more women than men leave the farm in search of better paying jobs. The better paid job is probably the real root of the matter, but several considerations may enter into the result.

Many farm homes are pretty, comfortable and convenient. It would be interesting to know what proportion of girls leave such homes for a city job. The large majority of dissatisfied girls likely come from farm homes where the conditions of the women's work are not so satisfactory as that of the men. It is altogether natural that improved farm machinery should be installed rather than modern household conveniences, because it is much easier to see a probable cash return from the one than from the other.

Some women heartily advocate the man helping with a certain amount of the housework. It is not so much the actual assistance he gives that is desirable, as the respect he feels for her work after he has been doing for awhile such trifling little jobs as washing dishes or sweeping floors with an old straw broom. Moreover, it is noted that the home in which men do assist in such tasks, is almost sure to have more "contraptions" for lightening them. Vacuum sweepers, electric lights, proper kitchen sinks, etc., abound in the home where the man of the house shoulders some of these responsibilities.

Woman's work on the farm is often discouraging in that it brings little or no cash return. Girls do naturally want things. A longing for clothes has driven many a farm girl to the paid job in the city. There she is frequently so disappointed that she regrets having left the farm. But if she stays her prospect is either to marry a farmer and continue to do alone the same distasteful tasks that she and her mother performed in the old home, or to stay on as the old-maid daughter without hope of a recognized wage-earning position, or of inheriting the farm from her parents. That will either be sold or go to the boys.

Good Mothers Make Great Men

PERHAPS your child will grow up to hold an important position in the affairs of the nation. How your heart will beat with pride if, when you see that day, you can say to yourself that your influence played a large part in shaping the character of one in whom the country reposes a great trust.

Secretary of Labor James Davis holds such a position. His parents were emigrants from Wales. There were six children, and at the age of seven Jim went into the mills. When he was eleven years old his younger brother

and he changed shifts somewhere in the dead of night.

He says that the sweetest picture in all the memories of his whole life is that of his mother, who would rise at 2 a. m. to give his little brother "a bite and a cup of tea" before he set out. Then she would step out of the house and stand at the gate holding a kerosene lamp above her head and, as she started the little fellow on his way, she would sing a song of the old country to encourage the child as he ran to meet his brother.

When they met, the future secretary would face about and sing at the top of his voice until his junior reached the flare of the blast furnaces. And all the time the mother stood with her lamp held high and sang until "Jim" was safe within the gate. "She thought we would be frightened in the night," he says.

How glad that mother must have been in after years that she showed this tenderness toward her sons. It is today a living inspiration to the man whose great aim in life is to better conditions for all humanity.

Musings of Molly

IF THE truth were known, there are more husbands who inwardly rebel against the careless house dress or untidy boudoir cap, than against the dressmaker's or milliner's bills.

Every man who goes to the church social or community picnic with his wife likes to feel proud of her appearance. If she is pretty and well-dressed, it casts a sort of reflected glory on himself. He stands convicted in the eyes of his neighbors of being a person of taste, of being a good provider, of having, through his own native charm, routed a probable legion of other admirers. If he can imagine a tinge of envy in the feelings of his fellow men, his satisfaction is complete.

We are told to "love our neighbors as ourselves" and the answer to the question "Who is my neighbor?" includes not only our immediate family and friends, but everyone whom we might help. It seems possible, however, to carry the missionary spirit too far. Miss Alice Robertson, Congresswoman, says that at ten years of age she was trying with doubtful success to make trousers for her brothers while her mother translated scripture for the Indians.

Property values occasionally remain unchanged for centuries. Several hundred years ago, some white men swapped a keg of rum to the Indians for an island called Manhattan. Today those white men would like to swap the island back for a keg of rum.

Better than grandeur, better than gold,
Than rank and title a thousand fold.
Is a healthy body, a mind at ease,
And simple pleasures that always please.

A heart than can feel for another's woe,
And share his joys with a genial glow,
With sympathies large enough to enfold
All men as brothers, is better than gold.
—Author not known.



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Chats with Fruit Grower's Wife

By Hazel Bursell

Find Your Colors and Wear Them

NOWADAYS the fashion book and the seed catalog share the honors as "Signs of Spring," with the former leading by a furlong as far as the ladies are concerned.

And why shouldn't we want new raiment? Don't we see the birds in bright plumage, the animals in glossy new coats, and the trees, flowers and sky all gay and colorful? It's nature's dressing-up time.

Unlike the rest of nature, we plan and choose our clothing, and right here is where the rub comes. We must realize that it isn't style or price, but becomingness that should have first consideration in choosing garments. It is not the woman who merely has the "latest" and spends the most that always looks well-dressed, but the one who has studied herself and knows how to adapt styles and colors so as to make the most of her good points and minimize her bad ones.

Becomingness Main Essential.

Becomingness then is the main thing to strive for. My art professor used to say that every woman owes it not only to her family and friends to make herself as pleasing as possible, but to strangers as well—that the world needed beauty. He was particular to say "pleasing" instead of "attractive."

There are two factors in becomingness—line or design and color. The subject of line is such a big one that we will leave it for a special topic, but color we'll talk about right now.

I can only give general rules and suggestions, as types and colors vary to such an extent. The only really sure way of testing colors for becomingness is try them on yourself, holding them next to the face in about the proportions they will have in the dress, if there is more than one color. Don't be afraid to try, as that is one of the big delights of shopping. Get the experimenting habit and then remember the results.

Blondes Have Wide Choice.

In general, blondes can wear blue, black, rose, green, grey, lavender, pink and brown. All shades of blues, of which there are so many lovely colors now, are becoming to the blondes—especially blues that match and bring out the color of the eyes. Golden browns usually bring out the beauty of yellow tresses, though browns should be tried out before being purchased. Black usually accentuates fairness of hair and skin.

It must be borne in mind that there are two types of blondes, the pale blonde with no color in her cheeks and the ruddy blonde with some color. Some colors that are very pleasing on the pale person—light blue, pink, rose, lavender—are not nearly as becoming to the other type.

Then there's the sallow blonde. But I can't really prescribe colors for her, except to say that she should set to work to improve her color through proper dieting and exercise outdoors. She should avoid blues and purples, in general. Their complementary colors are orange and yellow and they tend to bring these out in the face, which is exactly what we wish to avoid. Certain shades of green, certain rose colors, and some browns should be quite becoming.

Brunettes Wear Warm Colors.

There are pale brunettes and red-cheeked brunettes, and all kinds of brunettes in between, and each furnishes her own particular problem as to colors.

The pale brunette with a clear skin should wear very well greens, pink, red, coral, rose, orange, yellow and of course black and white. Brunettes usually find the bright warm colors very becoming, but again the individual must be considered as to figure and temperament.

The brunette girl with vivid coloring also wears many of the bright colors well—green, red, pink, orange,

tan, and some yellows. She can also wear very well, navy-blue, black and white, though white is not pretty with an olive complexion.

Our little red-haired friend has a problem all of her own, but properly handled her flaming locks become a decided asset and a mark of distinction. In every instance her hair should be made the most of through the proper colors in clothes and a most careful grooming of the hair.

Russet, leaf-brown and the other lovely shades of browns are usually the best friends to the miss with auburn hair, bringing out all the beauties of hair and face especially if she is blessed with glowing brown eyes that seem to belong with red hair. Green is stunning on a red-haired person, as it is the complementary color and complementary colors tend to each brighten the other, when placed together. Black and some dark blues are also very becoming.

Personality Big Factor.

But after all is said and done there can be no hard and fast rules for choosing colors, there are too many variations in types of women and such an infinite variety of colors. Then too personality is a huge factor, for a color may be becoming to the face and yet be altogether out of harmony with the personality. For instance red is altogether out of place on a sluggish, peopless person, though the color may be becoming.

Then there is size of figure to consider. A stout person should never wear bright reds, greens, pinks or roses as they immediately call attention to her size. Black is the best color to make the figure seem smaller, while white also magnifies its size.

The best rule for selecting colors is to try them on yourself in sufficient amounts to get the real effect, and through careful study find out "your" colors.

Then too, colors must be selected so as to harmonize with the other garments in your wardrobe. A good scheme is to select three or four becoming colors and keep all your clothes within that color scheme—then they will always harmonize, and you will always be well dressed.

About Those Window Shades

IT'S almost spring housecleaning and remodeling time, and while we're about it this year why not give our window shades and curtains the once over, with the idea that "only the fit shall survive?"

Shades and curtains should add a decorative touch to the home, as well as serve to give privacy and keep out excess light. Let's replace the faded and cracked and refuse-to-roll shades with new ones. The little money expended will be more than repaid in satisfaction and patience saved.

Use Shades of One Color.

All shades should be of the same color and drawn at the same level in order to insure similarity of appearance from the outside of the house. They are obtainable now in colors harmonizing with interior decorations—gray, tan, buff and other neutral colors as well as the all-too-common dark green. Two-tone shades are often most satisfactory with the outside all alike, and the insides to harmonize with the room finish.

Porch shades and awnings whether of canvas, bamboo, or split wood, if any are used, should harmonize with the window shades.

There are three types of window curtains. The most common and the most satisfactory method is to use the full length curtain which falls straight from the top of the window to a point even with the window ledge or a short distance below it. Sash curtains covering the lower sash are the second type. They are employed when it is necessary to have plenty of light

through the upper sash and yet have privacy.
A third method is to use full length curtains and tie them back, but this style is suitable only for colonial houses with colonial furniture, etc. It is not especially desirable for the average home.

Wide Choice of Materials.

The choice in materials for window curtains is almost unlimited. Besides the standard materials—plain and decorated scrim, net, dotted swiss, good quality cheese cloth, marquisette and muslin—there are thin silk fabrics such as Jap and China silk and the "sunfast" materials manufactured especially for curtains. Lace curtains are appropriate only for formal homes.

The essentials for all materials for curtains are that they shall not exclude light and that they shall hang in graceful folds, besides harmonizing with the room furnishings in design and color.

An even greater wealth of material is available for side curtains or draperies. Figured hangings of decorated scrim, cretonnes, silks, terry cloth, rough-surfaced, coarsely woven fabrics, and hand decorated textiles in batik, stenciling, tied and dyed work, and coarse embroidery all offer a wide range of choice in quality and designs.

The type of material chosen should depend largely on the type of house in which it is to be used. The large house calls for rich and dignified draperies, while in the bungalow or small house gay cretonnes have their best place.

Strive for Good Proportion.

In a room with wide low windows, striped hangings give a feeling of better proportion. For long, narrow windows, let the curtains project at the side to add breadth, while for small low windows, let the curtains be hung as far outside as possible. The draperies must harmonize with the rugs, runners, upholstery, etc., in the room. The housewife should visualize the room with the different types of curtains and drapes before making her final choice.

Anyway let's get rid of the old, faded shades and mended lace curtains for some fresh and attractive ones to give brightness to the home.

Apricot Recipes

This month I am including a series of recipes for delicious dishes made from dried or canned apricots. They are not an expensive fruit, and yet have an unusual flavor which adds variety to the housewife's list of desserts. I am sure that, having once tried the apricot sherbet and apricot parfait recipes given below, they will at once be put on the list of family favorites to stay there for "keeps."

Apricot Parfait.

- | | |
|---|---------------------|
| 1 cup cooked apricots, mashed | 1 cup sugar |
| $\frac{1}{4}$ cups apricot juice or hot water | 3 egg whites |
| | 1 cup whipped cream |

Boil the apricot juice or water with sugar until it forms a syrup. Beat whites of eggs until stiff, then gradually pour over the hot syrup, beating well with an egg beater. Beat until cool; add apricot pulp and fold in the whipped cream. Pour into a covered mould and pack in equal parts of cracked ice and coarse salt. Allow to stand several hours. Turn from the mould and serve.

Cornmeal Fig Pudding.

- | | |
|--|-------------------------------|
| 1 cup cornmeal | 6 cups milk (4 milk, 2 cream) |
| 1 cup molasses | 3 eggs |
| 1 cup finely chopped figs or any dried fruit | 1 teaspoon salt |
| | Spices |
- Cook meal with 4 cups milk, add figs, salt and then cool. Add well-beaten eggs. Pour into buttered baking dish, and bake in a moderate oven for 3 or more hours. When partly done add the remainder of the milk without stirring.

Apricot Jam.

This may be made from dried or canned fruit. Press the canned fruit through a sieve, add the syrup, and $\frac{1}{4}$ cup or more of sugar, and let simmer, stirring often until thick.

For dried fruit, press the fruit, cooked till tender, through a sieve, add the liquid and a generous allowance of sugar ($\frac{1}{4}$ lb. to 1 lb. of dried fruit) and let simmer, stirring often until thick.

Fruit Paste.

- | | |
|----------------|----------------------------------|
| 1 lb. figs and | 2 cups ground cracker crumbs |
| 1 lb. apricots | 1 cup chopped peanuts or walnuts |
| (Grind) | |
| 1 cup honey | Mold into balls. |
- These may be dipped in chocolate or molded into balls and rolled in cornstarch and sugar. Nuts may be pressed in the tops.

Make Over Your Old Bedroom

GIRLS, do you want an attractive, cozy bedroom all of your own? All right, you can have it for a very little money and a week of interesting work.

The average clean, plain spick and span bedroom with its crisp white curtains, grandmother's rag rug and a few personal belongings, does not fill the needs of the young girl who craves color and daintiness. It is not a place to rest in and enjoy but merely a place in which to sleep. Given a week's time any girl can remodel her bedroom into a veritable "picture" room.

Paint Your Furniture First.

First, wash the dark stained furniture to be found in almost any girl's room, with water and soap suds. Spread old newspapers on the floor to protect it from the dripping paint and put a coat of flat white paint on the dried furniture. The articles should then dry over night, and if necessary the next day.

Apply a second coat of paint. The furniture should now be a very light grey, almost white. When the last coat of paint has thoroughly dried put on the finishing coat of enamel of any color desired. Old ivory, white, gray, or maple will finish the furniture exquisitely.

While the enamel is drying the girl can make the curtains, bedspread, dresser and table runners, and pillows of unbleached muslin, costing not more than 15 cents a yard, and banding with cretonne in rich blue, deep rose, soft gold, or the brighter colors as red, green or orange. Unbleached muslin "fixings" for the bedroom are attractive with applique designs in colors, and also with cross stitch designs in the pastelle shades.

Few Rugs and Pictures.

One or two small woven rugs in harmonizing colors, together with a few favorite and appropriate pictures will complete the furnishing of the room. Colorful pictures from magazines in the right colors are very pretty for a girl's bedroom. When she is through, any girl may look with pride on her handiwork.



"IT'S SO SIMPLE"

JELL-O

America's most famous dessert

THE EASY JELL-O WAY

THE making of a Jell-O dessert requires almost no explanation but a few suggestions which may aid one in obtaining even quicker, more delectable results may be of service.

Never use more water or liquid than one pint to each package of Jell-O for most successful results, and if it is desired to cool the dessert very quickly, use only half a pint of boiling liquid, stirring well until the Jell-O is dissolved, then add half a pint of iced water or iced liquid. Results may be hastened by standing the mould of Jell-O in cracked ice to chill.

If whipped cream or stiffly beaten egg white is to be added to Jell-O, chill the Jell-O until it begins to thicken, then fold in the whipped cream or egg, and place on ice.

Canned pineapple produces better results than fresh in Jell-O desserts; if the latter is used, cook it in a thin syrup until it is clear, before adding it to the Jell-O.

When ready to serve Jell-O desserts, dip the mould for a second or two in warm water, taking care that the water reaches to the top of the mould, then arrange a plate over it so that the mould is exactly in the center, and turn plate and mould together. A gentle shake will suffice to unmould the jelly.

PINEAPPLE BAVARIAN CREAM

Dissolve a package of Lemon Jell-O in half a pint of boiling water and add half a pint of juice from a can of pineapple. When cold and still liquid whip to consistency of whipped cream. Add a cup of the shredded pineapple. Pour into mould and set in a cold place to harden. Turn from mould and garnish with sliced pineapple, cherries or grapes.

CUSTARD FOR WHIPPED JELL-O

Scald one cup milk in double boiler. Beat yolks of two eggs, add three table-spoonfuls sugar, and pour on the scalded milk. Pour back into double boiler and stir until creamy. Take from the hot water, cool and flavor with one half teaspoonful vanilla.

BEAUTY SALAD

Dissolve a package of Raspberry Jell-O in a pint of boiling water and fill individual moulds or cups one-fourth full. Let harden. Coarsely chop three bananas, sprinkle with lemon juice, and add half a cup of English walnut meats coarsely chopped. Put the mixture in the moulds and pour on rest of Jell-O when it is a cold liquid. At serving time arrange on lettuce with slices of banana sprinkled with nutmeats around the turned-out Jell-O. Serve with salad dressing. This makes nine individual servings.

The American Offices and Factory of The Genesee Pure Food Company are at Le Roy, New York, in the famous Genesee Valley Country.



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Balanced Fertilizer

FERTILIZERS are used to increase crops and profits. The right kinds and amounts of plant food make profits by reducing the cost of production of a unit of crop, by improving the quality, and by increasing the yield.

One-sided fertilizers may be unprofitable. Today Potash is the cheapest ingredient used in fertilizers, even cheaper than before the war.

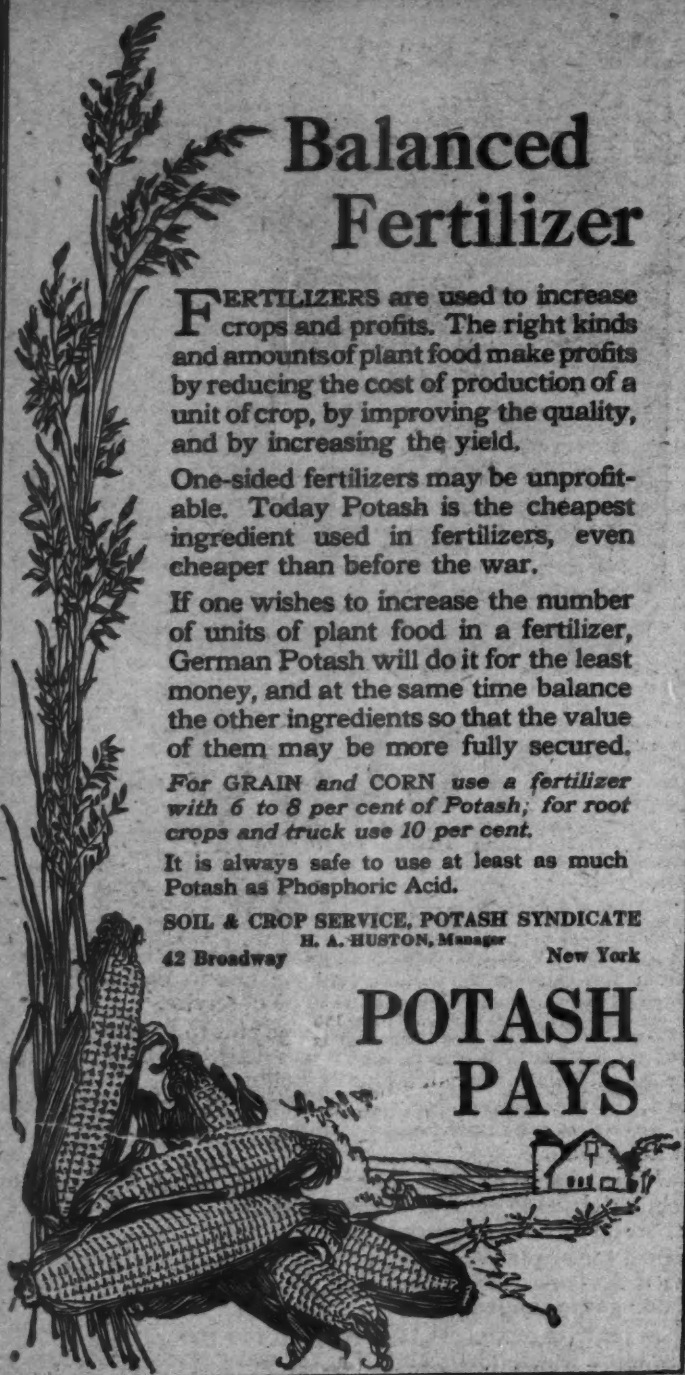
If one wishes to increase the number of units of plant food in a fertilizer, German Potash will do it for the least money, and at the same time balance the other ingredients so that the value of them may be more fully secured.

For GRAIN and CORN use a fertilizer with 6 to 8 per cent of Potash; for root crops and truck use 10 per cent.

It is always safe to use at least as much Potash as Phosphoric Acid.

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POTASH PAYS



Problems of Fruit Growing In Washington

By J. H. Auvil

WHILE North Central Washington is pre-eminently an apple District, there is little doubt that its fruit industry would be in a more flourishing condition if it produced more cherries, apricots, peaches, pears and small fruits. As growers we have lost sight of a "fundamental principle of farming, namely, that the more diversified the crops the better the economic condition of the community.

This idea was expressed here several years ago by a lecturer from the Washington State College, who endeavored to interest the growers in the Wenatchee District in producing something besides apples. His idea was alfalfa, pigs, cows, and chickens to supplement the apple crop and provide something for the family larder in case of apple crop failure or the failure to secure profitable markets.

This idea of diversification has not met with favor here because of the high price of land and the consequent high return per acre necessary to pay dividends on investment. How-

ever, diversification of some kind is necessary for the stabilization of the industry. We need more cherries, apricots, peaches, pears, and small fruits, as well as alfalfa, pigs, chickens and cows.

The labor situation has caused worry for several years, as it is difficult to secure labor for harvesting apples because of the great number of men needed and the short length of time employment is given. Whereas, if we had harvest from cherries to Winesaps, five months instead of two—as at present—labor would be more easily secured, and the rate would be cheaper because of the longer time of employment. Then, too, a greater variety of products would encourage the erection of canneries and by-products plants, which would not only furnish a market for cull apples, over-ripe peaches, cots, etc., now going to waste, but would furnish employment for many people at a time when they would otherwise be idle.

The building of cold storage has been delayed in this district because apples would have to bear all the ex-

penses of building and operating storage plants. More soft fruit raised in this district would encourage the building of cold storage and help to bear the burden of expenses by spreading it over a greater variety of products.

Early in its history the Wenatchee District earned the reputation of raising the world's best apples. Not only were the best apples grown but the percentage of Extra Fancy was very high in comparison with apples grown in other districts. This, coupled with the large yield per acre ordinarily obtained, made Wenatchee orchards the highest priced farm lands in the world. It is a matter of grave concern that for the past few years the percentage of first grade apples has been gradually lowered and the percentage of second and third grade apples has been correspondingly increased. This is especially alarming because we are two thousand miles distant from our best markets, and must pay a freight rate of 80c per box on our apples. The success of our industry depends upon raising a higher class fruit than can be grown in other districts nearer the principal markets. To illustrate the loss to the district on this year's crop, resulting from the production of too many second and third grade apples, the following figures are submitted. They are approximate, as it is too early to get the correct figures.

Lower Grades Increasing.

Ten years ago we produced approximately 75% Extra Fancy apples, 15% Fancy and 10% C Grade. This year the percentage is approximately 40% Extra Fancy, 30% Fancy, and 30% C Grade. To illustrate the loss to the community that this over-production of lower grades means in dollars let us compare what would have been realized had the grades been 75%, 15% and 10% instead of 40%, 30%, and 30%. At this time we do not know what will be realized for this year's crop, but for the purpose of this comparison let us say that Extra Fancy returns \$1.25, Fancy \$1.00 and C Grade 75c per box, and that we will market twelve million boxes of apples. Figuring this first at 75% Extra Fancy, 15% Fancy and 10% C Grade, we have:

9,000,000 boxes at \$1.25.....	\$11,250,000.00
1,800,000 boxes at 1.00.....	1,800,000.00
1,200,000 boxes at .75.....	900,000.00

\$13,950,000.00

Figuring 40% Extra Fancy, 30% Fancy and 30% C Grade, we have:

4,800,000 boxes at \$1.25.....	\$6,000,000.00
3,600,000 boxes at 1.00.....	3,600,000.00
3,600,000 boxes at .75.....	2,700,000.00

\$12,300,000.00

Deducting this from \$13,950,000.00, we have a net loss of \$1,650,000.00 to the industry, caused by raising so many Fancy and C Grade apples.

This leads us to a consideration of the causes for the lowering of the quality of our principal crop. The chief cause is the overcrowding of the trees and heavy cutting back in pruning to prevent interlocking of branches from adjoining trees. This naturally results in the growth of dense foliage shading the fruit and preventing coloring. The quality is further reduced by too heavy flow of sap making the apples spongy and susceptible to Baldwin Spot and internal breakdown. The remedy for this condition is the thinning out of our trees to such distances that the trees may grow naturally and receive sunlight from all sides.

Too Many Varieties.

Many of our orchards have too many poor varieties. This is especially true of early plantings, which were largely experimental. As no one knew what varieties would be best suited to our soil and climate or what would be commercially successful, each man chose those varieties that had been favorites in his native state, and since we have settlers from almost every state in the Union and a number from foreign lands, our district is quite well represented in the number of varieties of apples grown. We have six leading varieties, about twelve "following" varieties and fifty-seven "odd" varieties. The in-

dustry faces failure or the elimination of the fifty-seven odd varieties. If, on removing the poor varieties of apples, replacements are made with proper varieties of peaches, cherries, cots and pears, the industry as a whole will be materially benefited.

The growers of North Central Washington have not given sufficient thought to marketing. They have been content to grow the best apples in the world and leave the distribution and marketing to the speculator, dumping their product on the market at point of production for whatever figure the shipper was willing to offer. Only by the attempts of the Wenatchee Valley Fruit Growers Association and the North Pacific Fruit Distributors was the germ of co-operation kept alive during the early stages of the development of the industry. Later the Skookum Packers Association was for a time the only organization that was in any degree co-operative. Within the past two years have been added the Wenatchee District Co-operative Association and the re-organization of some of the Skookum Units into the Wenatchee-Okanogan Federation, but of these the Wenatchee Valley Fruit Growers Association, the North Pacific Fruit Distributors and the Wenatchee District Co-operative Association are the only ones that have made any attempt at marketing their own fruit, the others using the services of sales agencies.

No Marketing Plan.

There are upwards of twenty shippers and sales organizations operating in the Wenatchee District, each working individually for its own advantage and with little thought of a comprehensive marketing plan that would benefit the fruit industry as a whole. As individual institutions there is little criticism to offer, but the result of this kind of sales service is not beneficial to the industry. The best football coach in the world could not select a team that would win a game if each man in his team insisted on making individual plays. Cohesion in direction, unity of purpose and a co-ordination of all the elements into one working whole make teamwork, and this is what the Wenatchee District needs in marketing. There are many hopeful signs of the golden dawn of co-operative marketing. During the recent war the American public was vaccinated with the serum of co-operation and it has taken so well that farmers' co-operative societies are being formed everywhere for the sale of every kind of product grown. Let us hope that this is a sign that producers are awakening to the fact that the responsibility of marketing is theirs, and that they should receive whatever benefits accrue by virtue of good management and salesmanship.

There is another problem that is becoming a serious menace to the apple industry of the Northwest. That is the question of high freight rates.

Freight Too High.

Our industry was built upon a freight rate of 50c per box. During the war this was raised to 80c per box with an additional charge for icing and heating services that brought the cost of delivering a box of apples to the Eastern markets to nearly \$1.00 per box. While the consumer was receiving wartime wages he could pay a price for our apples that would give a slight profit over freight and cost of production. However, wages have now been reduced to the point where the consumer can no longer pay this high freight rate, plus cost of production, to say nothing of a reasonable profit to the producer. The reduction in freight has been only 10% as compared with the reduction in commodities and wages of from 50% to 75%. The fruit industry can not continue to exist and carry this burden. The railroads are choking to death the goose that is laying their golden eggs. Let us hope that the men in authority awake to a realization of this intolerable condition before it is too late, because, as producers, we feel that we have an equity in the goose and are entitled to an egg once in a while.

**9922. New Blouse.**

Distinctly different from the usual type of overblouse is the one pictured which would be pretty developed of a crepe or charmeuse. It is also a perfect blouse style for a combination of materials such as velvet, satin or brocade chiffon used for the front and back panel which is arranged to form a wide girdle that crushes into soft folds at the waistline, with chiffon or georgette for the sleeves and side-body.

The pattern is cut in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 1½ yards 36-inch material.

1374. Gingham Frock.

A gingham frock like the one illustrated has bias "tuck-like" trimming bands on the skirt. The latter is stitched to the waist at the hipline and the fullness is concentrated on the sides, giving a flat front and back effect.

The pattern is cut in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 4¼ yards 36-inch material with ¾ yard 32-inch contrasting.

1472. Becoming Lines for the Full Figure.

Much preferred by her of full figure is some sort of a panel, which can generally be depended upon to produce a slenderizing effect. In this style the collar extends into two panels which hang gracefully over the straight skirt.

The pattern cuts in sizes 36, 38, 40, 42, 44, 46 and 48 inches bust measure. Size 36 requires 3¼ yards 36-inch material with ¾ yard 36-inch contrasting and 6¼ yards ruffling.

1200. Smart Overblouse.

There are so many of these chic overblouses being worn and they are the simplest things to make, that it will be found both profitable and practical to make up two or three to wear with a suit or separate skirt.

The pattern cuts in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 1¼ yards 36-inch material.

1378. Becoming Style.

A very good-looking style that would do well in linen or ratine shows a collar that follows the Peter Pan outline. The simple and charming decorative note is the cross stitch on the front of the waist and tops of the pockets.

The pattern cuts in sizes 36, 38, 40 and 42 inches bust measure. Size 36 requires 3¼ yards 36-inch material and 3 yards binding.

1081. Jack at Play.

The most important thing in a little boy's life is play and so one of the most important things to have for him is a good play suit. And here it is. The pattern cuts in sizes 2, 4, 6, and 8 years. Size 4 requires 1½ yards of 36-inch material.

1673. The Three Points—

to look for in selecting a pattern style are, economy, simplicity, and good appearance. This dress is very easy and inexpensive to make, and is one of the most charming spring styles on the market.

The pattern cuts in sizes 16, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 1¼ yards 40 inch material with 2¼ yards 36-inch contrasting material.

1619. Cute Undies for Little Folk.

Don't think because you are a grown-up, that you are the only one who loves dainty "undies" that are easy to slip into. No, indeed, little girls do, too, especially if they are obliged to dress themselves each morning in a jiffy to get to school on time. An example of just such a type of tiny tot's lingerie is shown here.

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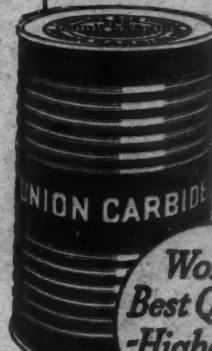
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The pattern cuts in sizes 2, 4, 6, and 8 years. Size 4 requires 1 yard 36-inch material.

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1637. Pleasing Apron That Will Serve You Well.

No woman who is an efficient housewife will overlook this apron style. Although you could make it in an afternoon and it would cost but 45c if gingham at 15c per yard were used with binding at 10c the piece (12 yards to the piece). It is far more attractive than those you would buy ready-made for a dollar.

The pattern cuts in sizes 36, 40 and 44 inches bust measure. Size 36 requires 2¼ yards 36-inch material with ¾ yards binding.

1612. Made in an Afternoon.

As the diagram plainly shows, this house dress is very easy to make, in fact it could be finished in an afternoon. Gingham, chambray or percale trimmed with a contrasting material

would make a very pretty morning frock, one that will tub well and that's easy to iron.

The pattern cuts in sizes small, medium and large. The small size requires 3¼ yards 36-inch material with ¾ yard 36-inch contrasting material.

1297. Your Little Daughter Dressed for Everyday and Best.

These two cunning dresses with matching bloomers were made from just one paper pattern.

The pattern cuts in sizes 2, 4, 6 and 8 years. Size 4 requires 2¼ yards 36-inch material with 4¼ yards binding for view B, and 2¼ yards 36-inch material with 9¼ yards ruffling for view A.

1438—Attractive Style.

The square collarless neck gives a youthful effect and the combination of plain and plaid material is the very latest thing for spring frocks.

The pattern cuts in sizes 16 years, 36, 38, 40, 42 and 44 inches with 1¼ yards 36-inch plain material.

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Use of Dynamite In Tree Planting

By A. B. Alford

INASMUCH as dynamite is being commonly used as a means of making the holes in which trees are to be planted, it is well to consider the general principles involved in tree planting and in the use of explosives in order that the best possible results may be obtained.

The first and most important principle in tree planting, yet one that is often overlooked, is that any tree, in order to make a good thrifty growth, must have a home for the root system from which the plant food necessary for life and growth can be readily obtained. Tree roots are often placed in small holes dug into hard subsoil which the tender roots cannot penetrate. It is impossible for the tree to thrive under such conditions and in many cases impossible for it even to live. Consequently there are many orchards of trees that just barely exist, bearing little if any fruit and unable to withstand any unfavorable climatic conditions. Trees are often considered unadapted to certain climates, seasons or soils, when the only trouble is improper planting.

Improper Planting Costly.

The same improper planting often results in the trees being absolutely ruined by insects or diseases because

the root system has not sufficient contact with plant food to give the tree the necessary vitality to withstand disease. Without contact with plant food the roots cannot feed the tree and without food the tree cannot thrive continuously. Moreover it is not sufficient for tree roots to have only a limited feeding area, for there is a heavy continuous demand made by the tree which must be supplied by contact of the small tender roots with plant food in solution between the soil particles. The roots can take up only liquid nourishment. Therefore it is necessary not only to provide a large area of loose soil through which the roots may penetrate but also to put the surrounding soil in such condition as to promote capillary action of soil water to make food available for the roots in dry weather. Many people seem to think that the roots of a tree serve only as an anchor for the tree, whereas their most important function is that of feeding the tree. A dead or non-producing tree is not worth its anchorage space.

There is no better nor more economical method of creating the loose soil condition which is essential for the growing tree than blasting the holes with dynamite. When this is properly done, it makes a good home

for the root system with a large available feeding area. In addition it subsoils the entire area thereby promoting general soil improvement, which in turn, insures stronger growth and larger production by the trees.

In the use of explosives for tree planting there are certain principles which should be followed to obtain the best results.

Quantity of Explosives.

A sufficient quantity of explosives must be used to loosen the subsoil thoroughly. This will depend upon the type of soil and the kind of trees to be planted. For small trees, such as peach, orange, or cherry, $\frac{1}{2}$ cartridge or $\frac{1}{4}$ pound of 20 or 40% ammonia dynamite or Dumorite is sufficient. For pecan or other trees with large rooting system, one cartridge or $\frac{1}{2}$ pound of 20 or 40% ammonia dynamite or Dumorite should be used. However, this amount will vary somewhat with different soils.

Depth of loading should also vary with soil and kind of trees as it has a direct influence on efficiency of the blast. The load should be planted at such a depth as to heave the soil up and thoroughly loosen it without throwing it into the air. For peach, orange, or cherry trees, where $\frac{1}{2}$ cartridge is used per tree, a good depth in average soil is from 14 to 18 inches. For the heavy rooted trees, where 1 cartridge is used per tree, a depth of 22 to 30 inches is required for the best results.

The holes for the charge can be bored with either a hand or machine soil auger, or driven with a bar of iron. If a bar is used, one octagonal in shape, pointed at the end and made of tool steel is most satisfactory.

The common and entirely satisfactory method of shooting is with cap and fuse, using a No. 6 cap.

Immediately after the shot is fired the blasted dirt should be removed, leaving the hole well open to insure complete aeration and to prevent caving in and puddling in time of rains. These cleaned out holes can be allowed to remain open to advantage until time to plant the trees, in case of delayed planting.

Time for Blasting.

There is only one time for blasting (for making holes in any way for trees) and that is when the soil is dry, as blasting in a wet soil would result in more harm than good, the soil being packed rather than loosened. However, the holes can be blasted when the soil is dry and left open to an advantage until the proper time for planting. It is best not to wait until winter or spring to blast the holes for very often the soil is wet at those times.

The most satisfactory way of planting the tree is to put good top soil in the bottom of the hole and pack it firmly; then plant the tree and if fertilizer is needed mix it with the soil after planting rather than put it in the hole at the time of planting. Never put manure in the bottom of a hole at the time of planting.

The observance of the following precautions also is important: Do not blast in a wet subsoil. However, small rains in dry seasons do not make subsoil wet. Use sufficient dynamite to meet requirements. An excess is better than not enough. Remove the soil from hole immediately after blasting. Use top soil packed firmly in the bottom of hole and around tree roots. Never use fertilizer in the bottom of holes. Plant thrifty trees, free from insects and diseases.

Planting by the methods which have been described will give trees the best start, but it is short sighted to depend on trees, however planted, to be self-sustaining.

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A Pretty But In-expensive Home

By Mary Lee Adams

MOST of us want a pretty home and when we succeed in making it lovely our joy is great. If we knew just how to go about it, we could afford many more pretty things both on our backs and in our houses. Someone who does know how to make a little go a long way, passed on a bit of her knowledge and experience to me. As I've found more than one of her suggestions good and useful, maybe you also can profit by them and be helped to solve your problem of freshening up the home this spring.

Her first advice was, "Don't have fussy things unless you are rich enough to change your decorations often. Simplicity tires less quickly and, in moderate-priced articles, is apt to be much better looking. A very handsome room, richly decorated with luxurious hangings, rare and authentic rugs and period furniture, the whole tone being, as one might say, pitched very high, is well fitted to stand an endurance test."

"Everything in it being of the best, it will not soon show the tarnishing touch of time but will long remain satisfying to the eye. Yet, even here, the eye of the wealthy owner is apt to weary. One day the wish for something new and different crops up, and next day we see a change."

The Slim Purse Opens Slowly.

"Not so fast are changes wrought in the simpler rooms of simple folk, though they may be required oftener," said my friend, who had now warmed up to her subject and was in for a heart-to-heart talk of considerable length. "We ponder long before we finally decide that the rug will simply disintegrate if not taken up, and that the rents in the window drapes can no more be camouflaged save in seasons of absolute dead calm. The least light breeze of summer reveals their shame."

"Finally it reaches such a pass that, if we must decide between buying new clothes or new curtains, there is no real choice left. New clothes, as I've proved before, can be dispensed with. The curtains are imperative. Sad as it sounds, it is stimulating to reach this conclusion. Right away we begin to figure on how much, or how little, it will take to freshen things up about the house."

"Many of us have lived in our rooms more years than any rooms should be lived in without having a single thing done to keep up their self-respect. Their original cheery appearance has assumed a sad air of discouragement. Instead of seeming to give a glad, forthcoming welcome to the entering guest, they have an air of timidly withdrawing into obscurity. Presently we begin to feel that way ourselves, and guests are not quite so welcome as formerly. When it comes to this, it is high time to act."

Men Like Bright Homes.

"One woman told me that what had held her back so long was the thought that her husband would think it all foolishness. When she consulted him about it, he said that he had been wondering why the house didn't seem so cheerful as he remembered it once did. She hadn't credited him with caring or noticing very much. Maybe husbands don't exactly notice, but believe me, they do care."

"And another thing," she continued, "what suits my house may not exactly suit yours, any more than my hat would suit you. Each home differs from the rest not only in itself, but in the personality of its owners, which it should express in some degree. We all recognize this in a way. The man's office ought not to be fitted out like the woman's boudoir, nor need the nursery be as sedate as grandfather's room. The general living rooms may be as dainty and fresh as the housewife herself but, in order to include a suggestion of the whole family, there

(Concluded on page 31)



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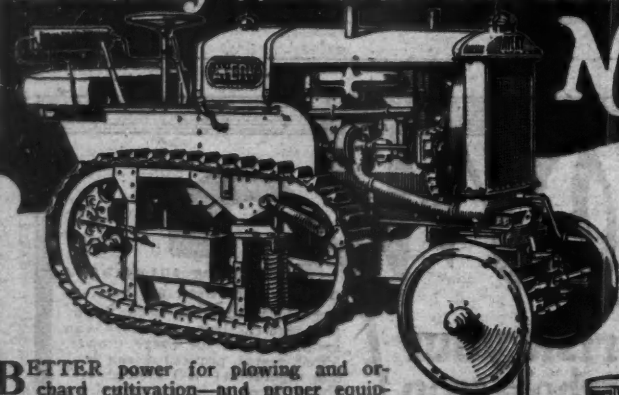
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Maryland Grape Experiments

(Continued from page 8)

these out along the middle wire. Usually two canes from the right and two from the left are trained along the wire each year and tied. From eight to ten buds are left on each cane. Renewal spurs are, of course, left. (Fig. 3.)

Single Stem Four Cane Kniffin.

The posts for this training system should be set as described for the Munson System. No cross arms are necessary, however, and two wires are fastened, one above the other on

periment Station to remove all canes but one and to carry this cane to the top wire, where it is securely tied. It should also be tied to the lower wire at this time. It is important to have this cane straight as it becomes the permanent trunk of the vine. In case the cane is not long enough to be fastened to the top wire, it is fastened in a similar manner to the lower wire of the trellis. In such a case, the following year a cane is extended to the top wire to continue the main trunk. During the third year,

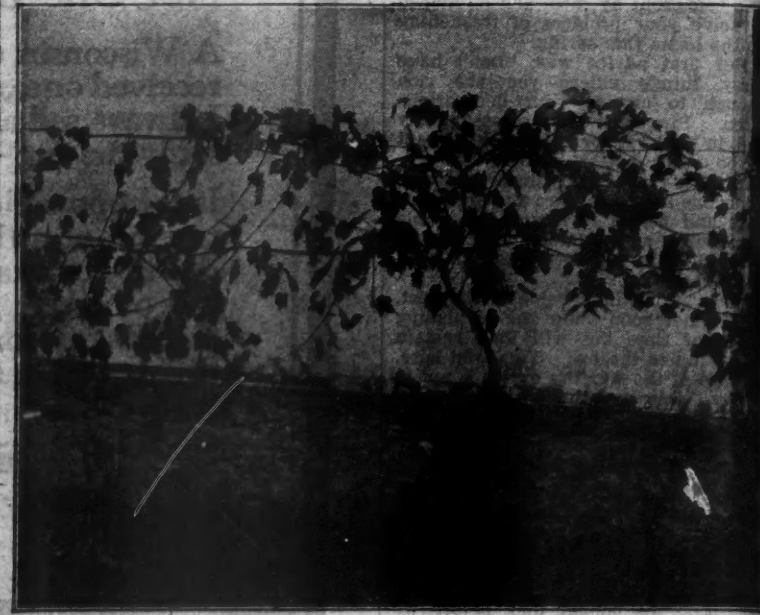


Fig. 4—Vine Trained by the Single Stem Four Cane Kniffin System.

the posts. The lower wire is generally placed either two and a half or three feet from the ground, while the upper wire is located from two to three feet above the lower one. (Fig. 6.)

At planting time, the first year's pruning should consist of selecting the cane, which is growing upright as near the head of the vine as possible, and then pruning this cane back to two

several shoots will form and some fruit will be produced. Unless some shoot is growing more rapidly than the others and dwarfing or checking a desirable portion of the vine, all shoots should be retained. The canes that are not needed on the vine can be removed at the next pruning, thus giving the vine the advantage of their growth during the summer. It is, of course, desirable to have the most

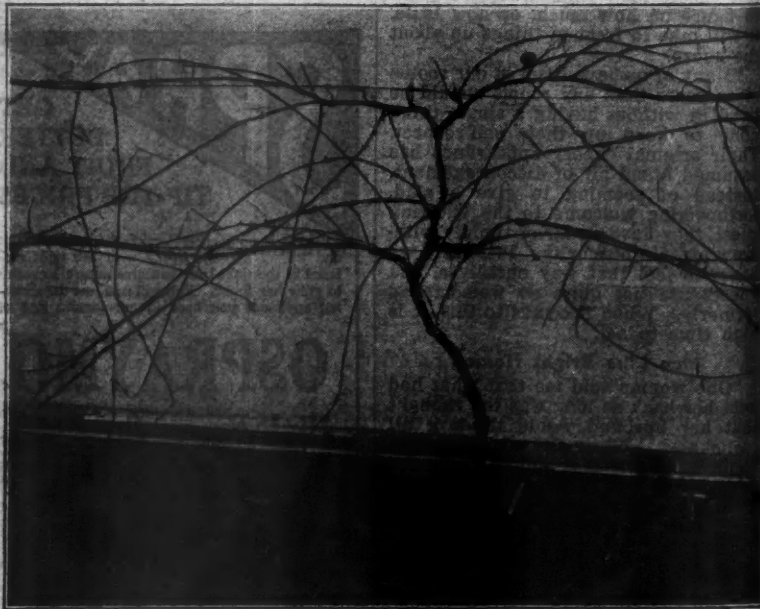


Fig. 5—Same Vine as Shown in Fig. 4. Picture Shows Appearance of Unpruned Vine During the Dormant Period of the Following Winter.

or three buds. The first season the shoots that develop can be tied to a stake or permitted to trail on the ground like melons.

At the second year's pruning, it is usually best to remove all canes but one and then shorten this cane to two or three buds as in the previous season.

At the third year's pruning, it has been the practice at the Maryland Ex-

vigorous shoots near the head so that these can be used at the next pruning for securing the training system desired. Vines pruned by this system often do have the most vigorous shoots near the head.

The fourth year's pruning should consist, first, of selecting two vigorous canes just below the lower wire and training one to the right of the trunk and one to the left, along the wire;

A Pretty Home

(Continued from page 29)

should be a touch of sturdy masculine plainness and comfortableness, like the pie under the meringue.

"Some people tell me they cannot afford to use different floor coverings for summer and winter, and so they keep down the heavy rug or carpet and wear it out walking over it. This is no more sensible than to say one can't afford to wear different weight clothes at different seasons, and so continue to wear an expensive winter dress instead of the cheap and pretty summer materials.

"If you are lucky enough to have good floor coverings for the cold weather, it is economy to replace them now with the nice-looking and very reasonable grass mats of several varieties. They are of far better grade than formerly and are made in so many tints that they can be found to accord with almost any color scheme you may use on your walls or in your draperies. The plain ones are as a rule in better taste than those with fancy patterns.

She Began in the Kitchen.

"I've just done over some of my rooms," she went on, "and if it won't bore you I'd like to tell you what I did in them at a surprisingly small cost. I started in the kitchen because it had somehow got on my nerves, being of a dismal color originally and the worse for wear. At present it looks simply 'scrumptious' to my eyes, and so restful.

"I had the walls painted a medium, sunny tan and put a good brown linoleum on the floor. It's so easy to wash that I'm almost tempted to mop it off even when it's perfectly clean. And because I wanted to feel cool in the kitchen, I hung crisp green curtains at the windows. There are plenty of windows for light and air, as there should be in all kitchens, but the fresh greenness of those cotton curtains feels like a cool hand laid on my brow. Just to express the lightness of heart my kitchen inspires, I have a pot of red geranium on each window sill, and they are almost like the vocal cry of a liberated spirit.

Seeing Things Rose Color.

"My living room is, as you know, very bright and sunny, and I do love the effect of sunlight shining through pink, so I hung a rather deep shade of rose-colored drapery material at the windows. Sounds extravagant I know, but I picked it up at a wonderful bargain. It's soft and drapes beautifully. The sun coming through lights up the whole room and also the faces of those in it. Oh, how flatteringly becoming it is!

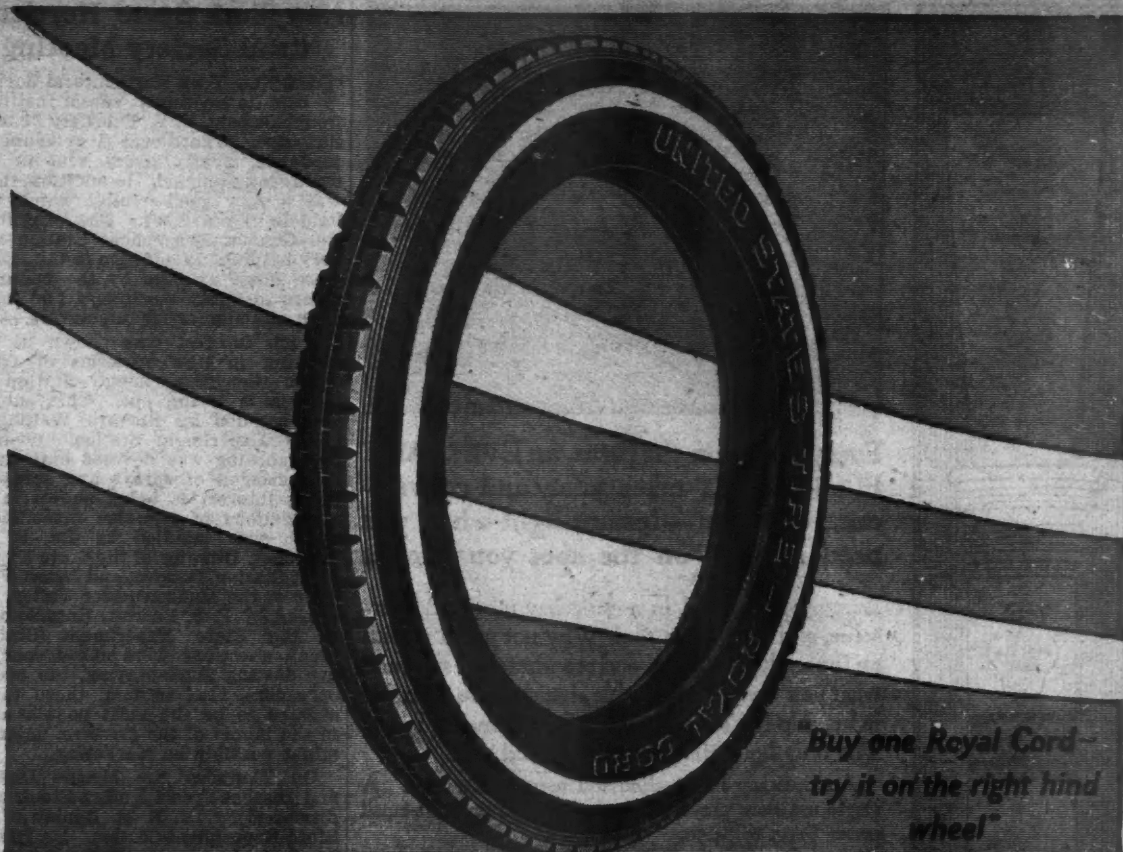
"The woodwork is ivory white and the wall paper a plain silvery gray. The floor is waxed and rubbed, rather dark, and the rug which almost covers it is—now don't be shocked—it's pink. And it's lovely. And it cost only \$15. It's one of the new thick grass weaves, and the color is so dim, so soft and dull that sometimes on a cloudy day I decide that it really is gray after all.

"I covered the chairs with a wide gray and black stripe with a conventional rose pattern. If you want to know why I chose the black stripe, just remember what I said about introducing a sturdy masculine note.

A Sunny Dining Room.

"The dining room was an experiment, but it turned out well. The walls are pale butter color, the woodwork brown. The rug is similar in texture to that in the living room, but brown also. At the windows I used some pure orange to create the illusion that the sun was always shining at meal times. It helps digestion.

"Too much of such a strong color would be glaring, so the curtains were of cream color, very sheer, and the orange formed just a strip at each side and across the top. Almost the only ornaments in this room are two bright orange candles in big blue candlesticks and a large blue luster vase of the shade that orientals call 'the color of love.'"



Buy one Royal Cord—try it on the right hind wheel

How it feels to be the leader of the tire business

THERE was a time when the bigger a business grew the more "uppish" it got.

These days are over—praise be!

The makers of Royal Cords are the leaders of the industry, but they don't feel it any loss of dignity to reach out for new friends.

And they take the very simple way of just asking you to try one Royal Cord. All the U.S. Royal Cord policies are simple.

For instance, Royal Cords have never talked about exceptional mileages. There are hundreds of testimonial letters in the files but they might sound extravagant and misleading to people and that is not a good thing.



Yet the makers of Royal Cords believe that Royals deliver the greatest average mileage of any tire that was ever made. This seems to be proven by the confidence car owners have in these tires.

Royal Cords have never been sold at "big discounts" or featured in "sales". People can't tell what a tire is actually worth if it sells for all kinds of prices in different sections of the country.

The support Royal Cords are getting today from so many new users is the outcome of people feeling confidence and trusting the Royal Cord makers. When you put Royal Cords on your car you are going to be satisfied. You will see what a good, clean money's worth they are.

United States Tires are Good Tires

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Elements of Radio Telephony

By W. C. BALLARD, JR., Assistant Professor of Electrical Engineering, Cornell University

A standard book on radio telephony—yet brief and simple, with no special mathematics

130 pages, pocket size, flexible, fully illustrated, \$1.50 net, postpaid

Here is an accurate, reliable book on radio telephony, the work of a recognized authority.

There really has been very little of an authoritative nature up to this time on radio telephony.

There have been some "how-to" books for boys and some other semi-technical material for laymen.

But here is a book that covers the subject authoritatively as well as simply and clearly.

The man with a technical background who wants to read up on radio will find this new book just the book for his purpose.

The specialist in radio will find it an excellent presentation of fundamental principles and their application. The book will be of value also to amateur radio operators because Professor Ballard has been in close

Chapter Headings

- 1.—Wire and Radio Telephone Systems.
- 2.—High Frequency Currents and Their Production.
- 3.—Vacuum Tubes.
- 4.—Vacuum Tube Oscillators.
- 5.—Modulator Systems.
- 6.—Receiving Equipment.
- 7.—Transmission.
- 8.—Miscellaneous.

touch with the amateur organizations of Western New York and knows the amateur's problems.

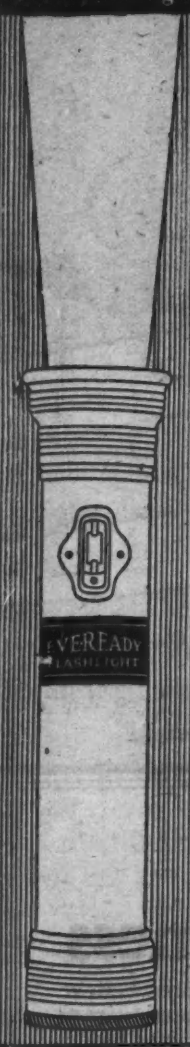
The book has a three-fold purpose:—

1. It presents a brief, simplified discussion of what happens when messages are sent and received by radio.
2. It gives a clear description of the apparatus required to produce these effects and explains how this apparatus operates.
3. It furnishes practical, unbiased information for the experimenter who desires certain results but who does not know what apparatus is necessary.

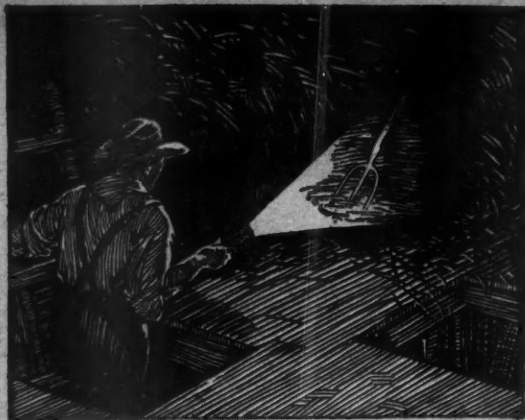
The author has charge of the course in radio at Cornell University.

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Flashlight complete for
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Expanded Metal TREGARDS

Made of tough expanded steel of 3-4 inch mesh. Excludes the smallest field mouse. Resists the largest jack rabbit. Much more rigid than wire netting or screen. Strong enough to be forced into ground to prevent burrowing. Being galvanized, will not corrode and will last a life-time. When trees are able to protect selves by heavy bark, TREGARDS may be removed and used on younger trees.

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Harrison's Nurseries, Dept. 52, Berlin, Md.
"Largest Growers of Fruit Trees in the World"

New York State Horticultural Society Meeting

THE New York Horticultural Society held its meeting at Vassar Institute, Poughkeepsie, N. Y., February 21 to 23 inclusive. There was a splendid attendance, nearly every seat in the hall being occupied. In addition, there was a very good exhibit which was held in the Armory. The exhibit of the Geneva Experiment Station was very helpful. In addition to this, there were large exhibits by the manufacturers of spray machinery and materials and similar manufacturers.

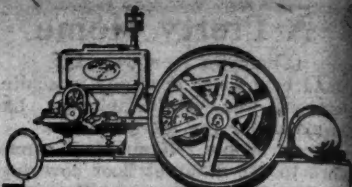
Much interest was shown at the meeting in new varieties of fruits which the Experiment Station at Geneva is trying out. This subject was handled by Richard Wellington of the Experiment Station. Wednesday morning was devoted entirely to a discussion of sprays and spraying. Much interest is being shown in investigations of Nicotine Insecticides, which was handled by Dr. R. W. Thatcher, Director of the State Experiment Station, Geneva, and Insect Problems of the Hudson River Valley, discussed by P. J. Parrott, Entomologist of the State Experiment Station. Many questions were asked concerning dusting and spraying, the use of spreaders, etc., in fact, these topics seemed to be the most popular ones in the minds of the growers, unless it might possibly be marketing.

On Thursday the Mosaic Disease and Disease-Free Planting Stock were discussed by Dr. R. H. Rankin of the State Experiment Station. Dr. Rankin has been making extensive investigations regarding mosaic diseases and other diseases which attack the raspberry. These studies have not been completed. A series of charts on the planting of disease-free stock and the weeding out of plants which are diseased showed results which substantiated such a practice as well worth while. Pruning New York Fruit Trees by Dr. W. H. Chandler brought out a great deal of discussion. The experiments which Dr. Chandler has been conducting show on a whole that during the first years of a tree's life the less the tree is pruned the larger and stronger it relatively becomes and that little or no pruning should be done until the trees reach heavy bearing. About the only strong pruning recommended by the author is at the time the trees set, and in this recommendation he was somewhat opposed by the investigators of the Geneva Experiment Station who state that their experiments show conclusively that the unpruned trees start to grow much better in the spring than those heavily pruned, that the top buds are the stronger and that with some varieties and types of fruits it is almost fatal to cut them down at planting time as far as New York state conditions are concerned.

Dr. U. P. Hedrick gave a very interesting address on Observations on Fruit Growing in Europe. Marketing came in for a great deal of attention. Herschel H. Jones representing the Farmers' Marketing Association of New York, gave a very instructive address on the handling of apples in New York City. C. I. Lewis, managing editor of the American Fruit Grower Magazine, discussed Advertising as a Factor in the Development of Horticulture. K. B. Lewis, of Redbrook, discussed a Local Co-operative Association and Clifford Miller, president, Claverack, discussed the Hudson River Central Co-operative Association. Co-operation is making rapid strides in the Hudson Valley. It now looks as though it will be only a question of time until the entire valley will be well organized. The concluding address on marketing was by Aaron Sapiro, who gave a masterful address, taking an hour, in which he dealt principally with fundamentals of orderly marketing.

One of the most attractive addresses of the session was given by C. R. Shons entitled, Observations on Fruit Growing in the Northwest. Mr. Shons has traveled through the Pacific Northwest and the Canadian Prov-

(Concluded on page 34.)



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Any reader of this paper may try them without risk. The laboratories producing Paratabs are so confident of good results that to introduce them to every poultry raiser they offer two big \$1 packages for only \$1. Send no money, just your name and address—a card will do—to the Paratab Laboratories, Dept. 943, 1100 Coca Cola Bldg., Kansas City, Mo., and the two \$1 packages, enough for 100 gallons of water, will be mailed. Pay the postman \$1 and postage on delivery, and you are not delighted with results in 10 days—if your chickens are not healthier, laying more eggs and entirely free from lice and mites—your money will be promptly refunded. Don't hesitate to accept this trial offer, as you are fully protected by this guarantee.

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The Filler System

(Continued from page 5.)

have Wealthy trees in our orchards twenty years old that are interplanted with Northern Spy nineteen feet between the rows which have been very profitable since they were five years old and some of which are still in a very thrifty condition. We have started this year to remove some of these trees. Wagner interplanted with Northern Spy did very well for about thirteen years and then started to get small and poorer in color.

The method of cultivation has a bearing on the filler system. The trees may be planted much closer with profit in the sod orchard than with cultivation. First because trees do not as a rule grow so large and they come into bearing earlier and the fruit is produced on smaller trees. Second, the mowing machine and spray rig are the only tools driven through the sod orchard during the growing season where tractors and cultivators of various kinds are driven over the tilled plots many times and closely planted trees make the operation of the machines, and tools used for cultivation much more difficult. In fact, it would be impractical to operate a drag or harrow over some of our orchards because of the grade and the nearness of the trees to each other but we are able to use a mowing machine satisfactorily. This shows that the filler system can be used to better advantage on the sod orchard. The sod mulch orchard does not allow for any intercrop except hay, unless fillers are used. To the writer's notion it is not a wise plan to remove the hay from the orchard. One cutting of alfalfa may be taken out or the hay might be removed and straw mulch, commercial fertilizer or barnyard manure applied in its place but this would not be the best practice, so it would seem that the early bearing apple trees used as fillers come the nearest to the solution of the problem.

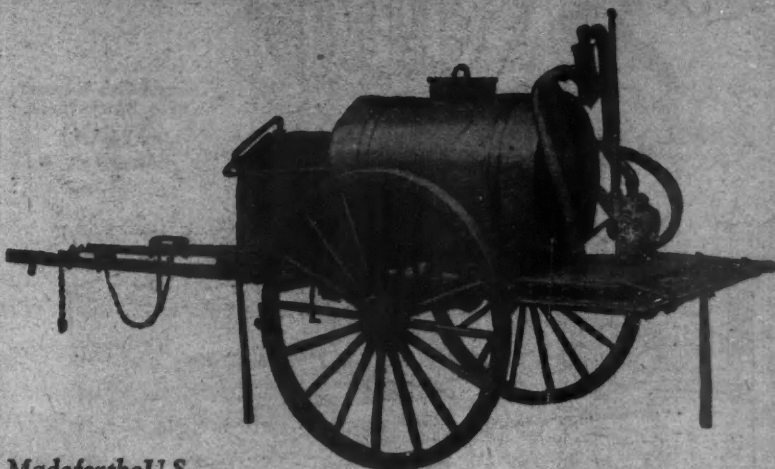
An Interesting Factor.

The distance from the packing house might have a bearing on the use of fillers. For instance one might own a field near the packing house that was easy of access and especially adapted to the production of fruit. The question would be whether to plant that nearby orchard to fillers or plant a new orchard in a distant field. I think it would be more profitable to use the filler system in the orchard near to the packing house. The nearness to headquarters of operation is a large factor in the efficient operation of an orchard. The adaptability of any certain location for apple trees is most often the determining factor for it is usually true that one tree in the right place with the right kind of care is worth many in a mediocre location. This discussion has been confined to the apple as the writer is more familiar with that fruit, but there is no doubt but what cherries, pears and peaches may be used as fillers under proper conditions with success.

To sum up the situation, an orchard using the filler system can be confined to a smaller acreage so that other crops may be grown on land that would necessarily have to be planted if the same number of trees were used but placed at greater distances apart. The filler trees will start bearing earlier, thus making possible a profit in a shorter time. This will increase your per acre results to a large extent over a ten or fifteen-year period and will influence the orchardist to plant the permanent trees at a greater distance apart which will no doubt be nearer to the correct planting distance. The object contemplated in planting fillers is to secure a profit from the orchard at a less age than is possible with permanent trees without undue harm to the permanent trees. Some people will say yes to this argument but they maintain that the fillers are left too long. This is simply a matter of business judgment and I can see no reason why a definite date cannot be placed for their re-

(Concluded on page 35.)

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Engine dependability,—a vital necessity in the farm truck,—is generously embodied in the Speed Wagon motor.

For its super-powerful and remarkably simple. Valve placement provides for large ports and complete water jacketing; reciprocating parts are built to withstand excessive strains; sturdy axles; vital parts 50% oversize; smooth transmission with large faced gears, silently operating; lubrication system absolutely sure; every part readily accessible for adjustment.

Designed and manufactured completely in the Big Reo Shops,—not assembled.

Chassis price \$1185 at Lansing, plus tax.
Twelve standard bodies. Capacity 500 to 2500 pounds. More than 75,000 in service today.



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New Improved 1923 Beeman Models

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New York State Horticultural Society Meeting

(Continued from Page 32.)

inces. His trip also took him through California and Utah and he delighted his audience for over an hour in telling in a humorous way the many observations which he made on that trip.

Much interest was shown by the fruit growers in the proposed horticultural meeting and show to be held in New York City next winter. An attempt is being made to get fourteen eastern states to help put on the biggest horticultural show that has ever taken place in America. It is now the plan to use the two floors of the huge Grand Central Palace for exhibition purposes. Exhibits are expected from every eastern state and very keen rivalry is expected. In addition to the exhibits there will be an educational campaign put on in New York City concerning eastern apples. Much propaganda will be sent out concerning the eastern apples, especially the New York apples. An attempt will be made to get every hotel and restaurant in New York City to feature New York apples. The growers seem to be very enthusiastic over the idea of the big show and supported it very heartily. Representatives also were present from Massachusetts and they stated that the New England states would be strongly represented at the New York show.

It now looks as though there will be three big fruit shows in the east this coming winter, one at New York, a show of the southern states at Washington, D. C., and the Michigan apple show at Grand Rapids. It is planned that in addition to these shows to put on very strong educational programs. The eastern fruit growers are due for a feast of good things in the fall and winter of 1923 and 1924.

Plant a Strawberry Bed

By B. W. Keith

DID you ever experience the pleasure of a strawberry bed where you could pick fresh, juicy, sweet strawberries for your table every day during the berry season and have plenty to can, preserve and jelly for winter use? The time, expense, and space required to grow all the strawberries your family can possibly use is insignificant compared with the pleasure and profits to be gained. From a plot of ground 40x35 feet, with just average care, can be grown a sufficient amount of strawberries to supply the needs of a family of seven. And with a little special care, a great many extra quarts can be produced and sold at a good profit. Few people realize the big expense of having to buy all the strawberries needed for their tables, while at the same time they do not realize how cheaply this same amount and many more berries can be grown. The pleasure of having all the strawberries your family can use is yours by setting a few strawberry plants this coming spring; but, just as sure as you do not grow your own strawberries, you will never have all you actually need.

Two hundred and fifty plants will be sufficient to set the plot of ground 40x35 feet. They should be set in rows 3½ feet apart and 40 feet long, requiring 25 plants per row. If this plot of ground is too large, the 250 plants can be reduced accordingly. These 250 plants should not cost over \$3.00 and the time required to prepare the soil and set them should be very little. Prepare the soil as early as possible in the spring, applying a good liberal covering of 35 bushels of well rotted barnyard manure. Thirty-five bushels will be sufficient for the plot of ground mentioned. If possible, this should be applied some time before plowing. Plow the manure under seven inches deep; and, while the ground is still rough, apply seven to ten bushels of fine, well-rotted barnyard manure and then harrow and work the soil until this top dressing is well mixed with the soil. Remember, the soil should be made very firm, which is accomplished by the aid of a roller or pulverizer. If it is

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The Pump of a Hundred Uses

An Every-day Necessity

THERE'S always something important to do—something that means easier work, better results. Of course, its most important use is for spraying fruit trees and truck crops, but it is just as good for disinfecting live stock and poultry, washing the motor car, fighting fire, washing windows, etc. and is also useful as an injector in veterinary cases. Thorough stream over 30 feet high; sprays the tallest trees from the ground. Made entirely of brass—nothing to be affected by chemicals. Guaranteed 5 years. If your dealer does not have it, send us \$5.00 and his name. (\$5.50 west of Rockies.) Knockpack extra. Send for catalog D.

The Armstrong Mfg. Co.
375 Seventh Avenue
Huntington, W. Va.



packed firmly, it will not hold the necessary moisture; so, consequently, the plants will not make the growth they should during the following summer. You will be well paid for all the time you spend in thoroughly preparing your soil.

Set the plants about eighteen inches apart in rows spaced three and one-half feet. Make a V-shaped hole with a common spade, spread the roots as much as possible in this hole and then pack the soil firmly about them with the foot. The crown, or bud, of the plant should be just even with the surface of the soil.

After planting, keep the soil well stirred about the plants, keeping down all the weeds. Shallow cultivation, not over two inches, should be followed. Keep all blossom buds picked off as they will devitalize the newly-set plants and prevent the formation of runners.

About three weeks or sooner after setting, the plants will begin to throw out runners, and on these about every six to sixteen inches will be formed the new or runner plants which will throw out roots from their underside and thus become established in the soil soon to become self-supporting. But before they have taken root fully in the soil, all their source of supply must come from the mother plant through the runner on which it is formed; therefore, they should be spaced to root as soon as possible. In taking root, these runner plants should not be allowed to form thickly between and along the sides of the mother plants. Place them, before they take root, so that they will not average closer than five inches apart, forming a row twenty inches wide.

After you have your twenty-inch row formed, all runners thereafter should be cut off and the plants you have in your row allowed to grow and become vigorous and thrifty as possible. They are the plants that will produce berries for you the following spring, and if you space them as mentioned above, they will be vigorous and thrifty enough to set and produce large yields of fancy berries.

After the twenty-inch row is formed, cultivation and hoeing should not cease but be kept up often enough to keep the ground mellow and all weeds and grass from between the rows and plants. In the late fall after ground freezes two inches deep, mulch the rows with some coarse material free from weed seed such as straw, marsh grass, potato vines, etc. Place the same five or six inches deep on the rows and if the supply is sufficient, some should be placed between the rows. In the spring shortly before the danger of frosts is over, part of the mulch on the rows should be removed and placed between the rows. The blossom stems will come up through the mulch that is left on the rows and when the berries form and ripen, they will be prevented from coming in contact with the soil. The remaining mulch will also keep down weeds and preserve soil moisture.

The Filler System

(Continued from page 33.)

Removal and a regular job made of it the same as trimming the orchard or mowing the grass. A more important error in the writer's judgment is to plant permanent trees too close. This makes a difficult problem. Taking all things into consideration after observing the use of fillers over a term of years and under varying conditions and with different varieties I think fillers may be used to advantage as a money-making proposition and I would not hesitate to advise their use.

A modification of the filler system might be worked out by using smaller growing varieties in alternate rows of larger growing varieties at a distance of thirty-three or thirty-four feet between the rows. This would give one the opportunity of leaving the fillers in the orchard for a much longer period of time. Also the small growing varieties might be used in solid blocks of four hundred to five hundred trees.

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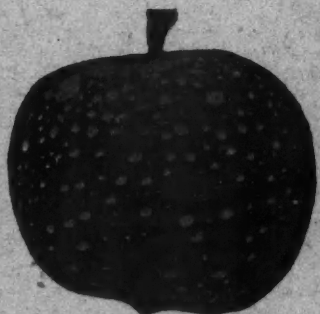
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These illustrations, made from actual photographs, show apples sprayed with arsenate of lead. The apple on the left shows the result of the ordinary method—the branch on the right shows the perfect spread with Kayso added.



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Spreads the Spray and Makes It Stay

KAYSO gives complete coverage of Lime Sulfur or Bordeaux on opening buds, unfolding leaves and blossoms. This means the greatest protection against Scab, Brown Rot or other fungous infection.

Kayso causes the spray to dry quickly in a durable coating and enables the orchardist to get the greatest benefit from sprays that are applied in rainy weather—because with Kayso added such sprays do not wash off.

Kayso makes the delayed dormant spray of Lime Sulfur and Nicotine Sulfate of highest effectiveness against Aphids, Red Bug, Psylla and Thrips because it spreads the Nicotine and makes it stick.

Kayso greatly retards chemical reaction between Lime Sulfur and Arsenate of Lead—no sludge or very little is formed.

Kayso makes Nicotine Sulfate really effective when combined with Arsenate of Lead for it liberates the Nicotine and spreads it over the insects.

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Riding Attachment for Harrowing, Draining, Planting, Cultivating, Mowing, etc. A portable Power Plant for Sawing Wood, Grinding Feed and doing the many power jobs on the small farm. Costs only \$8 to 10c per hour to run. Has REVERSE—

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Maryland Grape Experiments

(Continued from page 30)

second, select two more canes just below the upper wire and train in the same manner; third, cut back to spurs two more canes close to the trunk at each wire. Only one or two buds should be left on these spurs. From such renewal spurs, canes for training along the wires, will be developed for the next year. (Fig. 3.) All other canes should be removed. The canes which were first selected for training on the upper wire should be shortened to about six buds each. Those on the lower wire should be shortened to about four buds each. Thus, only about twenty buds will be left for producing the first commercial crop.

At the fifth year's pruning, four canes should again be selected, either from the base of the canes left the year before or from the renewal spurs, and these should be trained along and tied, two to each wire as in Fig. 6. In selecting the canes, it is advisable to choose the round, medium sized ones, about the size of a lead pencil with average length internodes and with round, plump buds. Renewal spurs of one or two buds each should again be left. Shoots will develop from these spurs, which in most cases can be used for the fruiting canes next year. It will probably pay, when possible to select spurs on wood older

and rebuilt without the complete loss of any one crop.

Yields by the Various Systems.

Growers will naturally be interested in the average yields obtained from different varieties by the various systems. They are as follows: Yields per ton per acre with Worden. The Single Stem Four Cane Kniffin System averaged over the four-year period 4.63 tons per acre, while the Munson System averaged 4.34 tons per acre. The Single Stem Two Cane Kniffin averaged 3 tons per acre, Two Wire Umbrella Kniffin, 3.4 tons per acre and the Fan System, 3.9 tons per acre. The yields per acre were somewhat reduced in the season of 1920 owing to the fact that that season had a rather light crop. The season of 1916 was one in which the vines bore very heavily. The yield per ton per acre of the Concord variety was as follows over the four-year average: The Single Stem Four Cane Kniffin, 4.92 tons; the Munson, 4.52 tons; the Single Stem Two Cane Kniffin, 3.4 tons; the Two Wire Umbrella Kniffin, 3.84 tons, and the Fan, 4.07 tons. The yields per acre in tons over the four-year period for the Lurie variety averaged as follows: The Single Stem Four Cane Kniffin, 3.86 tons; the Munson, 4.1

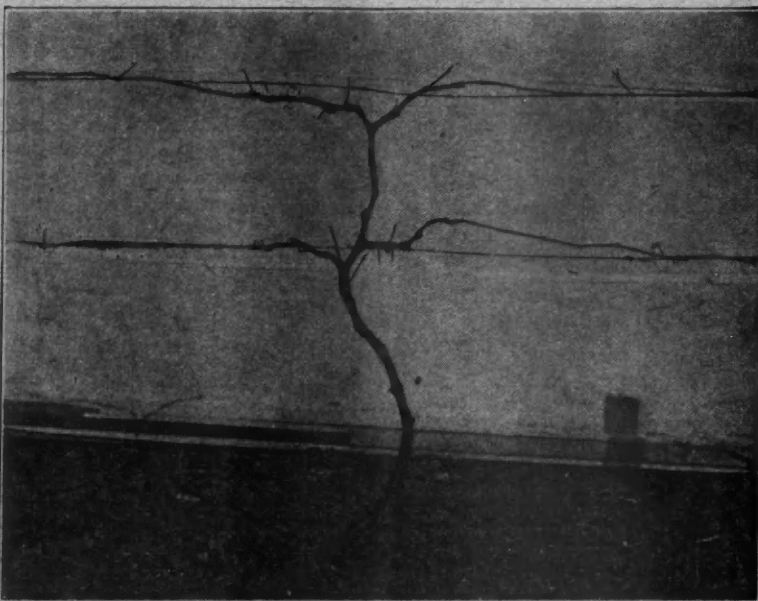


Fig. 6.—Same Vine as Shown in Fig. 5. After Pruning According to the Single Stem Four Cane Kniffin System. Note Renewal Spurs Left and Difference in Trellis When Compared to Fig. 3.

than two years. Shoots on such wood seldom bear fruit and as a result, if these shoots are spurred, they will probably make good fruiting canes for the next year. This practice will also keep the renewal spurs back close to the head of the vine. The canes left on the upper wire should be cut back to about ten or twelve buds each. Those on the lower wire should be cut back to about eight or ten buds each. All other canes should be removed. From each bud left on the canes after pruning fruit bearing shoots develop. These are simply allowed to droop down and are not tied. (Fig. 4.)

All future pruning should be very similar to that of the fifth year. The number of buds to leave each year will depend on several factors, but good, vigorous, mature vines growing in good soil should support from thirty to forty buds, or, in other words, sixty to eighty clusters.

After the vineyard becomes old, it is easy to develop a new trunk from a cane which comes up from the base. By tying this new cane to the old trunk for two or three years and training its shoots properly, a new vine can be developed before it becomes necessary to remove the old trunk. The canes on the old vine should, of course, be pruned rather severely during this time so that the new vine will receive sufficient nourishment. In this way the vineyard can be rejuvenated

tons; the Single Stem Two Cane Kniffin, 2.95 tons; the Two Wire Umbrella Kniffin, 3.09 tons, and the Fan, 3.49 tons.

Considering all phases of pruning and training, the authors seem to feel that the Single Stem Four Cane Kniffin System is the superior one.

Moss on Fruit Trees

MOSS can be quite readily cleared from the trees. The use of strong Bordeaux is one of the best sprays. The old formula of lime, sulphur and salt, where the same weight of salt is used in the spray as of lime and sulphur, namely 15 pounds to 50 gallons of the concentrated spray, is also very efficient in removing moss. But a substance which is very good to use is common lye. The lye can be used straight by dissolving in plain water, or it can be used in the lime sulphur spray. The rate to use is about one pound can of lye for every six or seven gallons of spray. Caution should be practiced, however, not to spray except when the trees are perfectly dormant. If the buds start to open and growth develops and strong lye is used, it will burn the foliage very badly and this spray must not be used except as a dormant spray. It cleans off the moss quite readily, seems to soften the bark and gives it a clean, bright appearance.

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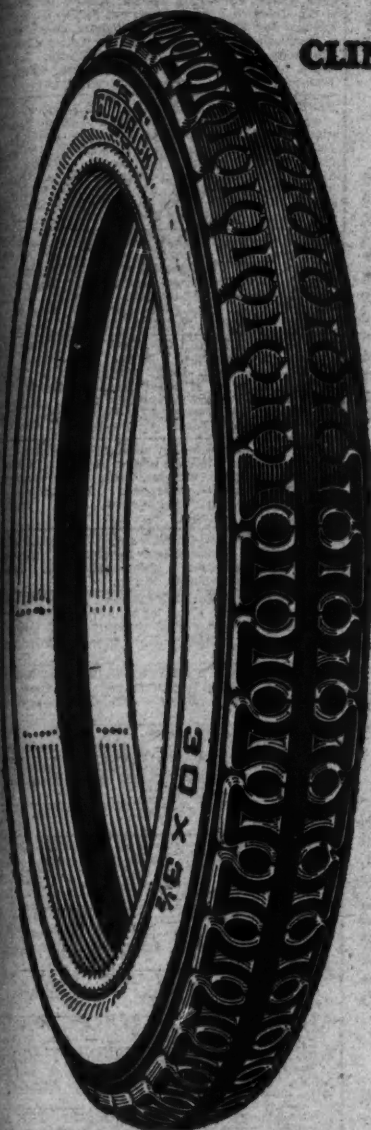
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For a limited time only—we will send a ONE DOLLAR bottle of FEMCO together with a famous oil atomizer valued at one dollar and a half for the small sum of \$2.00. Send your order today.
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Dunlap, \$3.50; Aroma, Glen Mary, Wm. Bell, Sample, etc., \$4.00; World's Wonder Premier, \$4.00; Progressive Everbearing, \$5.00; Champion Everbearing, \$5.00; Cumberland Raspberry, \$14.00; 100 Progressive, \$12.50, postpaid; 100 Dunlap, \$6.00, postpaid. Any following \$1.00: 25 Raspberries, 5 Currants, 5 Gooseberries, 12 Concord Grapes or 25 Gladioli. Catalog.
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Write now for Empire Fence Book.
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29 Monroe Street, Adrian, Michigan

Losing Money on Unclassified Apples

By Stanley Johnston

Michigan Agricultural College

A FRUIT grower during the past season shipped fifteen bushels of Fall Pippins to Chicago and upon receiving his returns found that he would have been money ahead to have left nine bushels at home. Usually a person expects that the more fruit they ship the more money they will make, and it seems strange indeed that a man should lose money because he did not let nine bushels stay away from the boat dock. Sounds as reasonable as two and two make three.

This grower shipped six bushels of A grade and nine bushels of Unclassified and the problem works out as follows:

Unclassified.	A Grade.
Selling price per bu. \$0.50	Selling price \$1.00
Expenses—	Expenses—
Basket21	Basket21
Freight25	Freight25
Cartage05	Cartage05
Commission05	Commission10
Total \$0.56	Total \$0.61
Loss06	Gain39

On the six bushels of A's the grower had a net return of \$2.34. On the nine bushels of Unclassified the grower had a loss of \$.54. If this grower had taken the nine bushels of unclassified apples to the cider mill he could have sold them for \$.30 per hundredweight or a net return of \$1.35. In selling them to the cider mill he would have had no package to pay for, no labor of packing and none of the expense of selling.

These figures were obtained from S. H. Wilson of the South Haven Steamship Co. In commenting on them Mr. Wilson remarked that many people would say: "Oh, well, the Steamship company should worry, they get their freight whether the bushel is Unclassified or A Grade." Mr. Wilson was emphatic in stating that he would much rather see the higher grades of fruit shipped, because as soon as the growers began to realize a loss on their shipments they cut down on the quantity sent over to Chicago. On the other hand if the growers shipped the better grades and realized a profit the shipments kept up in a normal manner.

Occasionally another erroneous idea is expressed in regard to the amount of fruit handled by the commission men. As a rule the commission men do not care to handle Unclassified fruit as their commission is so much smaller on each basket. They would much rather handle less baskets of high-grade fruit on a market that kept up than to have to handle a lot of Unclassified apples that would glut the market and cause it to decline or become unsteady.

This little, simple problem in arithmetic should carry more significance than volumes of words in telling us what to do with our Unclassified apples. Once in a while some Unclassified apples can be sold to a certain trade to advantage, but as a rule they should either be sent to the cider mill or dumped on the ground, whichever method seems to be the best.

Early Spray Checks Apple Aphids

As the days grow warmer and the buds begin to swell and show green at the tips, the apple aphids begin to hatch out and cluster on the buds, where they begin feeding on the tender green tissues. At this time the insects are much more susceptible to spray applications than a little later when the apple foliage has advanced sufficiently to afford the aphids some protection, says the entomologist at the New York Agricultural Experiment Station at Geneva. Three-fourths of a pint of nicotine sulfate added to 100 gallons of spray mixture gives very satisfactory control, says this authority, pre-

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One application remains effective three to four months, outlasting 10 to 20 times any other known substance. Tree Tanglefoot has practically displaced all other banding compounds, wherever introduced.

A pound makes 12 lineal feet of band three inches wide. No expensive apparatus or skilled workmen required—easily and quickly applied with a wooden paddle; anyone can apply it.

Will not soften, run, nor melt, yet always elastic, expanding with growth of tree.

Especially recommended against: Climbing Cut Worms, Tussock Caterpillars, Canker Worms, Gypsy and Brown-tail Caterpillars and Ants.

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In the Station Experiments, adequate control has been obtained only when the spray was applied from the ground and under the trees rather than from the spray rig as is commonly done in New York orchards.

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PUMPS

This is due to the fact, say the Station workers, that the lower buds on the tree and the undersides of the twigs and branches are not thoroughly covered with the spray when it is applied from the top of the spray tank. On the other hand, when spraying is done from the ground and when the operator moves about under the tree so as to insure wetting the underside of every twig and branch, the pests may be completely wiped out.—N. Y. Agr'l Exp. Sta.

Spring Time to Set Strawberries

THE best time for setting out the strawberry bed is early spring as soon as the ground can be properly prepared, say the horticulturists at the New York Agricultural Experiment Station at Geneva. Spring planting is preferred because weather conditions are usually more favorable for a good start and because plants set in the spring come into bearing the next season, whereas plants set in the fall do not bear the following season but must be carried through two winters before fruiting begins.

Matted Row System of Planting

Several planting methods are followed by strawberry growers, but the Station fruit specialists find that the so-called matted row system requires less labor and usually results in greater yields than any other method of planting. By this method the plants are set in rows from 3 to 4 feet apart with the plants from 18 to 30 inches apart in the row, depending on the variety. The plants are cultivated throughout the summer and fall to keep down weeds and to maintain a mellow soil.

Good Varieties

While the choice of varieties depends largely upon local conditions, the Station authorities recommend among others Beacon, Beder Wood, Dunlap, Howard No. 17, and Ozark for early varieties; Abington, Barrymore, Bliss, Boquet, Chesapeake, and Joe for mid-season varieties; and Brandywine, Gandy, Jessie, Late Stevens, Parker Earle, Sample, and William Belt for late varieties.—N. Y. Agr'l Exp. Sta.

Japanese Beetle

TWO or three years ago the Japanese beetle first appeared near Philadelphia. This insect is a native of Japan as the name indicates. It is a metallic colored beetle, which promises to become one of the worst pests the American fruit and vegetable growers have to face. The insect is spreading very rapidly, it is now covering a large area in eastern Pennsylvania and New Jersey. It feeds on over 200 host plants, feeding on both the foliage and the fruit. Up to the present time no method of control has been found. The insect refuses to eat plants which have been sprayed with arsenic. It flies very rapidly and unless it can be checked, it is only a question of time until this insect will spread over the entire United States. The greatest hope of control at this time seems to be to introduce parasites. Investigations made by the United States Department of Agriculture show that this insect is not so serious in Japan as it seemingly is going to be in this country. This is due largely to the fact that there are parasites in Japan which tend to keep the beetle in check. The government is now at work introducing various parasites with the hope that they can import enough of these and breed them in such large quantities that they will soon check the ravages of this beetle. Meanwhile, we may find other methods of fighting it.

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WANTED WOMEN, GIRLS. LEARN DRESS DESIGNING, making. \$85 week. Learn while earning. Sewing experience unnecessary. Sample lessons free. Write immediately. Franklin Institute, Dept. E-550, Rochester, N. Y.

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Classified Advertising

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Four shingles to a strip. Base of best grade roofing-felt. Have rot-proof "seal-back." Mineral-surfaced in red, green or blue-black. When laid look exactly like individual shingles. Fire-resisting, durable. Need no painting. Two sizes—10 inches and 12½ inches deep, both 32 inches long. The 12½ inch Multi-Shingle, laid 4 inches to the weather, gives three-ply roof—the 10-inch gives two-ply roof.

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Identical in coloring, size and shape with Everlastic Single Shingles, but with extra heavy waterproofed base. "Giants" for strength and durability. Because of their rigidity, are often laid on top of old roof.

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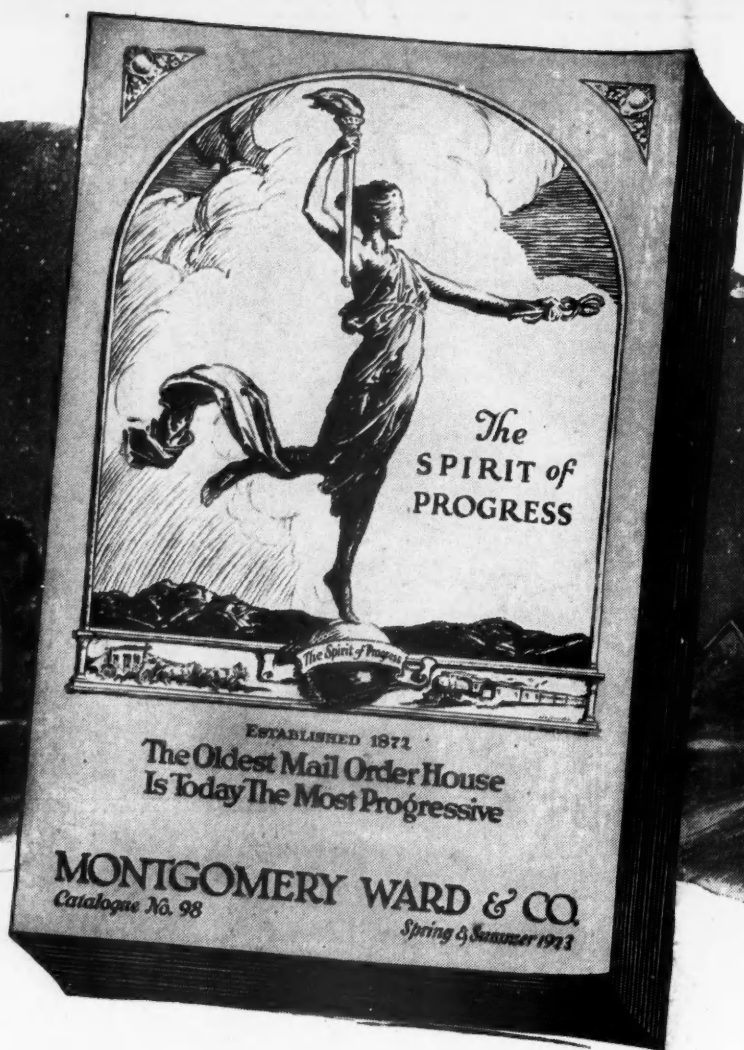


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